Vol. 933 Number 4

OFFICIAL GAZETTE

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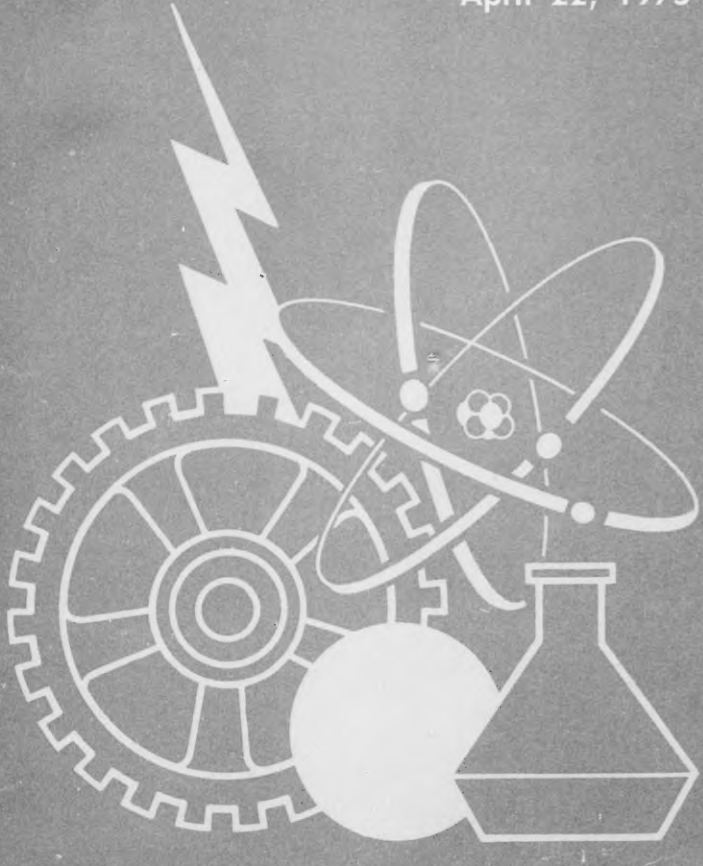
PATENTS

April 22, 1975



U.S.
DEPARTMENT
OF COMMERCE

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

April 22, 1975 Volume 933 Number 4

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TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent and Trademark Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

Interference Practice

On August 22, 1974, notice of proposed rulemaking regarding the revision of §§ 1.125, 1.231(c), 1.247(c), 1.251(a), (b) and (c), 1.253 and 1.277(b) of Title 37, Code of Federal Regulations, dealing with testimony requirements in interferences, was published in the Federal Register (39 FR 30358). Interested persons were given until November 15, 1974 to submit written comments and suggestions. Full and careful consideration was given to all written comments received, in consequence of which the text of the original proposal has been modified in several instances.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952, as amended (85 Stat. 364; 35 U.S.C. 6), Part 1 of Title 37, Code of Federal Regulations, is hereby amended as follows:

1. Section 1.255 is revised to read as follows:

§ 1.225 *Failure of junior party to file statements or to overcome filing date of senior party.*

If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of the application of another party, judgment on the record will be entered against such junior party unless he has filed a proper motion under § 1.231, within the time set for such motions, seeking some action in the interference. If such motion has been timely filed but does not result in action in the interference which removes the basis for a judgment on the record, such judgment will be entered unless the motion related to a matter which may be reviewed at final hearing under § 1.258, and within 30 days of the decision denying his motion, or a later time set by the patent interference examiner, the junior party concerned requests that final hearing be set to review such matter. Also, such a junior party may within such 30 day period, or time set, request a final hearing to review such a matter raised by his opposition to a motion under § 1.231(a) (2), (3), (4), or (5) which was granted over his opposition. Such a junior party will not be permitted to take testimony except on granting of a motion accompanied by a showing of good cause, which should normally include names of proposed witnesses and affidavits or declarations by them giving their expected testimony.

2. In § 1.231, paragraph (c) is revised to read as follows:

§ 1.231 *Motions before the primary examiner.*

* * * * *

(c) A motion to amend under paragraph (a)(2) of this section or to substitute another application or declare an additional interference under paragraph (a)(3) of this section must be accompanied by an amendment adding claims corresponding to the proposed counts to the application concerned if such claims are not already in that application. The motion must also request the benefit of a prior application as provided for under paragraph (a)(4) of this section if the party concerned expects to be accorded such benefit.

* * * * *

3. In § 1.247, paragraph (c) is revised to read as follows:

§ 1.247 *Service of papers.*

* * * * *

(c) Certified transcripts of testimony under § 1.276 (but copies of the testimony must be served (§ 1.253(a))).

* * * * *

4. In § 1.251, paragraphs (a), (b) and (c) are revised to read as follows:

§ 1.251 *Assignment of times for discovery and taking testimony.*

(a) Subject to the exception provided in paragraph (c) of this section, a period for preparation for testimony will be set in which all parties should complete discovery and other preparatory activities, except for service by the senior party required by § 1.287(a)(1) which is governed by § 1.287(a)(2)(iii).

(b) Subject to the exception provided in paragraph (c) of this section, times will be assigned in which the junior party shall complete his testimony in chief, and in which the other party shall complete the testimony on his side, and a further time in which the junior party may take rebutting testimony, but he shall take no other testimony. If there be more than two parties to the interference, the times for taking testimony will be so arranged that each shall have an opportunity to prove his case against prior parties and to rebut their evidence, and also to meet the evidence of junior parties. If a senior party fails to file a preliminary statement, or expressly elects to rely solely on his effective filing date, he will be assigned only a time for taking rebuttal testimony, and no junior party will be assigned a time for taking rebuttal testimony unless another junior party senior to him is assigned a time for taking testimony in chief. But, subject to the conditions imposed upon junior parties by § 1.225, such senior party may be assigned a period for taking testimony concerning a matter raised by a motion under § 1.231.

(c) Times for preparation of testimony, for compliance with § 1.287(a) and for taking of testimony will ordinarily be assigned in notices sent to the parties after motions under § 1.231 have been disposed of or, if no such motions have been filed, after the close of the motion period (§ 1.231). Such times will not normally be assigned for a junior party who fails to file a preliminary statement or whose preliminary statement fails to overcome the effective filing date of the senior party. (See § 1.225.)

* * * * *

5. Section 1.253 is revised to read as follows:

§ 1.253 *Copies of the testimony.*

(a) In addition to the certified transcript of the testimony (§§ 1.275 to 1.278) or executed copies of affidavits or stipulated testimony or facts (§ 1.272), and the exhibits, three true copies of the testimony of each party must be filed for the use of the Office (a total of four copies), and one true copy must be served upon each of the opposing parties. Only one set of exhibits need be filed in the Office.

(b) These copies of the testimony may be submitted either in printed or in typewritten form.

(c) These copies, whether printed or typewritten, must include the testimony presented by the party filing the same, a copy of the counts of the interference, an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are introduced and offered in evidence. The pages must be serially numbered throughout the entire record of testimony and the names of the witnesses must appear at the top of the pages over their testimony.

(d) The copies of the testimony for all parties must be filed and served on the opposing parties by the date specified in the order setting times for taking testimony or such extensions as may be granted.

(e) When the copies of the testimony are submitted in printed form, they shall be printed in 11-point type and adequately leaded; the paper must be opaque and unglazed; the size of the page shall be 7⅝ by 10¼ inches (19.4 by 26 cm.); the size of the printed matter shall be 4⅛ by 7⅛ inches (10.6 by 18.2 cm.); and they shall be bound to lie flat when opened. Twenty-five additional copies for the United States Court of Customs and Patent Appeals, should appeal be taken, may also be filed; if no such appeal be taken, the twenty-five copies will be returned to the party filing them.

(f) When the copies of the testimony are submitted in typewritten form, they must be clearly legible on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.6 by 27.9 cm.) in size (letter size) and one of the three copies must be a ribbon copy, but need not be executed by the certifying officer. (The certified transcript may be a properly executed carbon copy. See § 1.277.) The typing shall be on one side of the paper, in not smaller than pica-type; and double-spaced with a margin of 1½ inches (3.8 cm.) on the

3,236,390, H. F. J. Sprengel, SHIP'S CARGO BOOM WITH PENDULUM PURCHASE BLOCK FITTING, **filed** Jan. 9, 1967, D.C. Md. (Baltimore), Doc. 17959–W, *Blohm & Voss AG* v. *Grace Line, Inc.* Judgment dismissing counterclaims. Appealed by defendant and decision of the District Court reversed by the 4th Circuit, therefore damages do not have to be assessed. Case closed, Dec. 16, 1974.

3,325,097, A. Slutsky, TAXI METERS AND A CONTROL SYSTEM FOR TAXI METERS, **filed** June 24, 1971, D.C., S.D.N.Y., Doc. 71–C–2811, *Abraham Slutsky* v. *Efficient Instruments Corp.* Order of discontinuance, Dec. 11, 1974.

3,388,370, R. A. Elm, SOLDERLESS CONNECTOR FOR INSULATED WIRES, **filed** Dec. 4, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–2539 ACW, *Minnesota Mining and Manufacturing Co.* v. *Eugene and Jeffrey Biedel.*

3,490,362, B. J. Massari, DIE PLATE FOR EMBOSSING AND CUTTING; **3,558,425,** same, LAMINATED TAPE FOR PRINTING WITH A PRESSURE TRANSMITTING TOP LAYER TO SEVER AN INTERMEDIATE BRITTLE LAYER; **3,673,953,** same, APPARATUS FOR CUTTING INDICIA FROM TAPE, **filed** Dec. 6, 1974, D.C.N.J. (Trenton), Doc. 74–1914, *Bernard J. Massari* v. *Reynolds/Leteron Co.*

3,514,091, Johnson, Engstrom and Hawkins, CLAMPING DEVICE, **filed** Dec. 17, 1974, D.C. Minn. (St. Paul), Doc. 3–74–319, *Arthur B. Engstrom and Howard C. Hawkins* v. *Green Lake Manufacturing Company, Inc.*

3,545,154, Bobzin and Sawyer, SURFACE PANEL ASSEMBLY WITH RIGID STRIPS TO CONCEAL FASTENERS, **filed** Dec. 9, 1974, D.C., W.D. Mich. (Grand Rapids), Doc. 74–436, *The Celotex Corporation* v. *Bendix Homes Systems, Inc.*

3,550,532, T. Zimmerman, MOISTURE-PROOF COMBUSTIBLE CARTRIDGE CASE, **filed** Aug. 12, 1974, D.C.N.J. (Newark), Doc. 74–1227, *Theodore Zimmerman* v. *United States Government, Dept. of the Army.* Opinion and order granting defendants' motion to dismiss action, Dec. 18, 1974.

3,582,553. (See 3,038,964.)

3,588,425. (See 3,490,362.)

3,611,910, J. S. Hughes, CORN POPPER, **filed** Nov. 29, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3459, *Ropat Corp.* v. *Marshall Field and Co.*

3,620,454, Broderick, Wishnie and Keys, FLAME SPRAY TORCH, **filed** Sept. 26, 1973, D.C., W.D. Pa. (Pittsburgh), Doc. 73–827, *Eutectic Corporation Inc.* v. *Co-Ordinated Industries, Inc. and Richard O. Drossman.* Stipulation filed and order entered by Judge Knox dismissing case with prejudice, Dec. 9, 1974.

3,657,513, L. Howard, ELECTRICAL HEATING CABLES, **filed** Nov. 13, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3283, *Delta-Therm, Inc.* v. *Easy Heat Wirekraft Division of MSP Industries Corp.* Pursuant to plaintiff notice of dismissal, order cause dismissed, Dec. 5, 1974.

3,673,953. (See 3,490,362.)

3,703,966, Johes and Smith, SEED COTTON STACKING APPARATUS, **filed** Dec. 20, 1974, D.C., N.D. Tex. (Lubbock), Doc. CA–5–74–146, *Rosebud Metal Works, Inc.* v. *Walter Scheef, individually and doing business as Lorenzo Pump & Machine.*

3,706,254, V. Morin, GUITAR SERVICING TOOL, **filed** Feb. 9, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–288–DWW, *Astro Music Inc.* v. *Richard Eastham and Betty Jean Eastham, doing business as Veda Enterprises.* Judgment and order thereon that Claim 1 of the Morin Patent No. 3,706,254 is invalid and void. The single claim of the Longone et al. Patent No. 2,812,682 has not been infringed by defendants. Plaintiff shall take nothing by its complaint and the same is dismissed with prejudice. Defendant, Betty Jean Eastham shall take nothing by her counterclaim and the same is dismissed with prejudice, entered Dec. 12, 1974.

3,736,930, H. W. Georgi, PARENTERAL ADMINISTRATION FLUID FLOW CONTROL SYSTEM, **filed** Dec. 10, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–3609–R, *Ivac Corp.* v. *LaBarge Incorporated and Tekmar S.A. and Tekmar Medical Ltd. Corp.*

3,746,608, M. Takahashi, SHAPED ARTICLE OF SYNTHETIC RESIN HAVING MECHANICALLY DISORDERED ORIENTATION, **filed** Dec. 9, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3554, *Weld-Loc Systems, Inc.* v. *B. H. Bunn Company.*

3,750,722, R. L. Nowak, FUNNEL, **filed** Dec. 5, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–3571 WPG, *Cal Custom Accessories, Inc.* v. *Funnelcap Inc.*

3,831,172, Olliges and Polanek, SOLID-STATE SOUND EFFECT GENERATING SYSTEM, **filed** Nov. 19, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3352, *Universal Research Laboratories, Inc.* v. *Chicago Coin Machine Company.*

3,842,802, Land and Hight, MARKER FOR USE IN THE DETECTION OF OESTRUS IN ANIMALS, **filed** Dec. 10, 1974, D.C. Nebr. (Omaha), Doc. CV 74–0–340, *AG-Tronic, Inc.* v. *Frank Paviour Ltd. and Frank Paviour.*

D. 211,156, J. H. Wilson, JAR, **filed** May 10, 1972, D.C., S.D.N.Y., Doc. 72–2009, *The Nestle Company* v. *General Foods Corp.* Order and stipulation of dismissal of the claims and assertions made by the plaintiff in its complaint, reply and amended reply and of the claims and assertions made by defendant in its answer and counterclaims shall be with prejudice, Sept. 5, 1974.

left-hand side of the page. The sheets shall be bound at their left edges, in such manner to lie flat when opened, in a volume or volumes of convenient size (approximately 100 pages per volume is suggested) provided with covers. Documentary exhibits should not be included in bound volumes of testimony. Multigraphed or otherwise reproduced copies conforming to the standards specified will be accepted.

(g) The testimony of any party failing to supply copies thereof as specified may be refused consideration.

6. In § 1.277, paragraph (b) is revised to read as follows:

§ 1.277 *Form of deposition.*

* * * * *

(b) In order to have a ribbon copy of the testimony available as required by § 1.253(f), a carbon copy of the deposition may be executed by the witnesses and the officer and filed as required by § 1.276.

* * * * *

Effective date. These amendments shall become effective on May 1, 1975 and will apply to those interferences in which times for testimony are set on and after that date.

Dated: February 27, 1975.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved:

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc.75-6782; Filed 3-13-75;8:45 am]

Published in 40 F.R. 11873

Late Payment of Issue Fee

[37 CFR Part 1]

Proposed Guidelines and Procedures

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 USC 6) as amended on October 5, 1971 (Pub. L. 92-132, 85 Stat. 364), and on January 2, 1975 (Pub. L. 93-596, 88 Stat. 1949), the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending § 1.316 and by revising § 1.317.

All persons are invited to present their views, objections, recommendations, or suggestions relating to the proposed rule changes to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on or before June 4, 1975. All comments received will be available for public inspection in Room 11C17A of Building 3, at 2021 Jefferson Davis Highway, Arlington, Virginia. No oral hearing will be held.

This proposal has been reviewed and determined to have no major inflationary impact.

The purpose of the proposed rule change is to provide guidelines and procedures for the implementation of Public Law 93-601 of January 2, 1975. Section 3 of this Act amended the last sentence of section 151 of Title 35 of the United States Code to read as follows:

If any payment required by this section is not timely made, but is submitted with the fee for delayed payment and the delay in payment is shown to have been unavoidable, it may be accepted by the Commissioner as though no abandonment or lapse had ever occurred.

Section 4(a) of Public Law 93-601 relates to applications abandoned or patents lapsed prior to January 2, 1975 due to failure to pay the issue fees specified in notices mailed on or after October 25, 1965, within the time provisions of 35 U.S.C. 151, then in effect. This section states that:

The Commissioner of Patents may, in accordance with Section 3 of this Act, accept late payment of issue fees, the payment of which was governed by the provisions of Public Law 89-83: *Provided,* The term of the patent for which late payment of such an issue fee is accepted shall expire earlier than the time specified in Section 154 of Title 35, United States Code, by a period equal to the delay between the time the application became abandoned or the patent lapsed for failure to pay the issue fee and the time the late payment is accepted after enactment of this Act: *Further Provided,* No patent with respect to which the payment of the issue fee was governed by the provisions of PL 89-83 and for which a late payment of the issue fee is accepted under the authority created by Section 3 of this Act, shall abridge or affect the right of any person or his successors in business who made, purchased or used anything covered by the patent, after the date of (sic) the application became abandoned or patent lapsed for failure to pay the issue fee but prior to the grant or restoration of the patent, to continue the use of or to sell to others to be used or sold, the specific thing so made, purchased, or used. A court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the date the application became abandoned or patent lapsed for failure to pay the fee but prior to the grant or restoration of the patent, and it may also provide for the continued practice of any process covered by the patent, practiced, or for the practice of which substantial preparation was made, after the date the application became abandoned or patent lapsed for failure to pay the issue fee but prior to the grant or restoration of the patent, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before the grant or restoration of the patent.

1. Section 1.316 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.316 *Application abandoned for failure to pay issue fee.*

* * * * *

(b) The Commissioner may accept the late payment of the fee specified in the notice of allowance later than three months after the mailing of the notice as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by the issue fee or portion thereof specified in the notice of allowance, unless it has been previously submitted, the fee for delayed payment, and a showing in the form of an oath or declaration as to the causes of the delay.

2. Section 1.317 is proposed to be revised to read as follows:

§ 1.317 *Lapsed patents; delayed payment of balance of issue fee.*

(a) Any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three month period.

(b) The Commissioner may accept the late payment of the balance of the issue fee after the three month period as though no lapse had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by the remaining balance of the issue fee specified in the notice, unless it has been previously submitted, the fee for delayed payment, and a showing in the form of an oath or declaration as to the causes of the delay.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved: March 17, 1975.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc.75-7695; Filed 3-24-75;8:45 am]

Published in 40 F.R. 13221, Mar. 25, 1975

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,966,960, M. Rochlin, AIR FILTER, **filed** Nov. 20, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74-3411-RF, *Foamade Industries* v. *Krizman Filtron Industries, Filtron Products Co.*

3,038,964, A. G. Bose, LOUDSPEAKER SYSTEM; **3,582,553,** same, **filed** Nov. 19, 1974, D.C. Colo. (Denver), Doc. 74-F-1070, *Bose Corporation* v. *Pacific Stereo Inc. et al.*

3,163,464, Martin and Re, MECHANISM FOR RECLINER-ROCKER TYPE OF CHAIR, **filed** Nov. 22, 1974, U.S. Court of Appeals, First Circuit, Mass. (Boston), Doc. 74-1399, *Seng Co. et al.* v. *Dual Manufacturing & Engineering Inc.*

Certificates of Correction for the Week of Apr. 22, 1975

D. 231,119	3,840,674	3,848,971	3,859,300
D. 233,964	3,841,617	3,849,471	3,859,432
3,513,003	3,841,961	3,849,900	3,859,878
3,699,227	3,842,020	3,850,066	3,860,527
3,771,841	3,842,297	3,850,143	3,860,817
3,774,062	3,842,521	3,850,167	3,860,943
3,780,648	3,842,930	3,850,412	3,861,041
3,785,805	3,843,397	3,850,744	3,861,194
3,795,737	3,843,584	3,851,048	3,861,945
3,796,713	3,843,694	3,851,128	3,862,027
3,796,969	3,843,791	3,851,234	3,862,059
3,797,084	3,843,824	3,851,543	3,862,065
3,802,136	3,844,062	3,851,823	3,862,485
3,803,058	3,844,071	3,852,275	3,862,605
3,811,435	3,844,934	3,852,342	3,862,976
3,811,699	3,845,059	3,852,360	3,863,203
3,812,406	3,845,242	3,853,241	3,863,413
3,812,563	3,845,422	3,853,330	3,863,418
3,813,340	3,845,773	3,853,599	3,863,724
3,823,230	3,846,116	3,853,905	3,863,846
3,824,337	3,846,120	3,854,164	3,864,133
3,826,298	3,846,148	3,854,201	3,864,290
3,828,101	3,846,218	3,854,224	3,864,431
3,831,058	3,846,447	3,854,769	3,864,677
3,832,518	3,846,622	3,855,125	3,864,700
3,832,562	3,846,965	3,855,600	3,864,752
3,833,185	3,847,060	3,855,624	3,864,771
3,834,698	3,847,691	3,856,437	3,864,910
3,836,537	3,847,737	3,856,446	3,865,042
3,836,664	3,847,860	3,856,541	3,865,332
3,837,184	3,847,915	3,856,917	3,865,530
3,837,814	3,847,954	3,856,989	3,865,857
3,838,450	3,848,163	3,857,180	3,866,294
3,838,542	3,848,196	3,857,216	3,866,549
3,839,037	3,848,389	3,858,112	3,868,072
3,839,702	3,848,412	3,858,264	3,868,161
3,840,338	3,848,761	3,859,241	

Disclaimers

3,324,326.—*Edward E. Sheldon,* New York, N.Y. ELECTRON DEVICES WITH FIBEROPTIC MEMBERS. Patent dated June 6, 1967. Disclaimer filed Aug. 13, 1973, by the inventor.

Hereby disclaims the term of this patent subsequent to Mar. 27, 1979.

3,345,531.—*Edward Emanuel Sheldon,* New York, N.Y. DEVICES FOR LIGHT TRANSFER BY FIBER OPTIC MEMBERS. Patent dated Oct. 3, 1967. Disclaimer filed Aug. 13, 1973, by the inventor.

Hereby disclaims the term of this patent subsequent to Sept. 7, 1982.

3,423,620.—*Edward Emanuel Sheldon,* New York, N.Y. VACUUM TUBE DEVICE HAVING LIGHT CONDUCTING RODS AND LUMINESCENT SCREEN. Patent dated Jan. 21, 1969. Disclaimer filed Aug. 13, 1973, by the inventor.

Hereby disclaims the term of this patent subsequent to Mar. 26, 1984.

3,515,979.—*Marcel J. E. Golay,* Rumson, N.J. MAGNETIC FIELD CONTROL APPARATUS. Patent dated June 2, 1970. Disclaimer filed June 9, 1972, by the assignee, *The Perkin-Elmer Corporation.*

Hereby enters this disclaimer to claims 1, 2 and 5 of said patent.

3,531,106. *Curtis A. Larson* and *Richard J. Ullmer,* Rochester, Minn. FLOATING THROAT KNIFE. Patent dated Sept. 29, 1970. Disclaimer filed July 1, 1974, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1, 3, 4 and 10 of said patent.

3,545,971.—*John C. Barnes, Chester C. Wilt* and *William W. Rees,* Rochester, N.Y. RAPID PROCESSING OF PHOTOGRAPHIC X-RAY FILM. Patent dated Dec. 8, 1970. Disclaimer filed July 17, 1974, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to all claims (claims 1–10) of said patent.

3,549,667.—*Klaus Wunderlich* and *Hans-Samuel Bien,* Leverkusen, and *Fritz Baumann,* Opladen, Germany. PREPARATION OF ARYL SUBSTITUTED HYDROXY ANTHRAQUINONES. Patent dated Dec. 22, 1970. Disclaimer filed Mar. 13, 1974, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enters this disclaimer to claims 1–4, of said patent.

3,560,498.—*Donald E. Bublitz,* Concord, Calif. and *Raymond H. Rigterink,* Midland, Mich. TETRASUBSTITUTED PYRIDAZINES. Patent dated Feb. 2, 1971. Disclaimer filed Oct. 23, 1973, by the assignee, *The Dow Chemical Company.*

Hereby enters this disclaimer to claims 1, 5 and 7 of said patent.

Dedications

3,243,078.—*Perry O. Pherson,* Cheltenham, Pa. SHEET MATERIAL DISPENCER PACKAGE. Patent dated Mar. 29, 1966. Dedication filed Dec. 17, 1974, by the assignee, *International Paper Company.*

Hereby dedicates to the Public the entire remaining term of said paent.

3,272,385.—*Cecil H. Watkins,* Toronto, Ontario, Canada. DISPENCER BOX. Patent dated Sept. 13, 1966. Dedication filed Dec. 17, 1974, by the assignee, *International Paper Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,346,141.—*Perry O. Pherson,* West Suffield, Conn., *Alfred A. Slater,* Weston, Ontario, and *Karl Engel,* Toronto, Ontario, Canada. PACKAGE. Patent dated Oct. 10, 1967. Dedication filed Dec. 17, 1974, by the assignee, *International Paper Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,349,959.—*Cecil H. Watkins,* Toronto, Ontario, Canada. BOX FOR DISPENSING STACKED SHEETS. Patent dated Oct. 31, 1967. Dedication filed Dec. 17, 1974, by the assignee, *International Paper Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,473,694.—*James A. Murphy,* Toronto, *Cecil H. Watkins,* Mimico, and *Ernest James Dewhurst* and *Carl Engel,* Toronto, Ontario, Canada. CARTON. Patent dated Oct. 21, 1969. Dedication filed Dec. 17, 1974, by the assignee, *International Paper Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,473,800.—*Ernst Daniel Nystrand,* Green Bay, Wis. VACUUM CONVEYING SYSTEM. Patent dated Oct. 21, 1969. Dedication filed Dec. 17, 1974, by the assignee, *International Paper Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,512,437.—*Arnold A. Enneper, Harvey James Spencer* and *Anthony R. Wierzba,* Green Bay, Wis. ORBITING ROTARY CUTTING APPARATUS. Patent dated May 19, 1970. Dedication filed Dec. 17, 1974, by the assignee, *International Paper Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,553,003.—*Herbert E. Carlton* and *Erlan E. Rose*, Columbus, Ohio. FIBER REINFORCEMENT. Patent dated Jan. 5, 1971. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,556,152.—*Ernst Daniel Nystrand*, Green Bay, Wis. ROTARY VALVE. Patent dated Jan. 19, 1971. Dedication filed Dec. 17, 1974, by the assignee, *International Paper Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 29, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-28-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-15-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-18-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-27-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-6-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	9-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-9-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-1-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-3-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-3-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-10-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-12-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	8-5-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-31-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	6-10-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-16-74

Expiration of patents: The patents within the range of numbers indicated below expire during April 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,828,487 to 2,832,958, inclusive
Plant Patents..... Numbers 1,694 to 1,697, inclusive

REISSUE PATENTS

GRANTED APRIL 22, 1975

ERRATA

For CLASS	See PATENT NO.
239–195	28,397

REISSUES

APRIL 22, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,396

APPARATUS FOR SEPARATING SUSPENDED SOLID PARTICLES FROM A CARRIER GAS

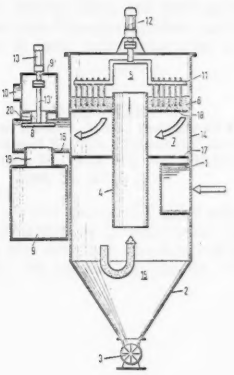
Max Berz, Kochel am See, Germany, and Wolfgang Berz, Bayerlandstrasse 7, 8113 Kochel am See, Germany; said Max Berz assignor to said Wolfgang Berz

Original No. 3,594,991, dated July 27, 1971, Ser. No. 777,454, Nov. 20, 1968, which is a continuation-in-part of abandoned application Ser. No. 491,670, Sept. 30, 1965. Application for reissue July 25, 1973, Ser. No. 382,581

Claims priority, application Germany, May 17, 1965, B 81,965; July 28, 1965, B 83,018; Nov. 22, 1967, P 16 07 671.4; Mar. 19, 1968, P 16 57 128.8

Int. Cl. B01d *50/00*

U.S. Cl. 55—294 14 Claims



1. In an apparatus for separating suspended solid particles from a carrier gas, in combination:

a. centrifugal separator means for separating relatively coarse solid particles from said carrier gas, and for collecting the separated particles, said separator means including

1. a container of circular cross section about an upright axis, said container having a top wall,
2. inlet means on said container for admitting a stream of said carrier gas having said solid particles suspended therein to said container and directing said stream tangentially into said container relative to said axis, whereby the admitted gas moves in a vortex about said axis, and
3. discharge means for discharging accumulated solid particles from said container;

b. a housing including side and top walls superimposed on said container and defining a filter chamber therein;

c. a plate member extending horizontally across said chamber and dividing the same into an upper compartment and a lower compartment;

d. a gas port leading outward from said lower compartment;

e. filter means for removing relatively fine solid particles from said carrier gas,

1. said filter means including a layer of particulate filter material carried on said plate member and having an exposed substantially horizontal, upper face in said upper compartment,
2. said plate member being formed with openings connecting said compartments for flow of fluid therebetween and of a size to retain said particulate filter material;

f. a conduit extending from said container through said lower compartment, said plate member and said layer in engagement with the top wall of said container and said plate member, said conduit having

1. an axis substantially coinciding with said axis of said container, and
2. two axially terminal orifices in said container and upwardly spaced from said exposed face in said upper compartment respectively; and

g. rake means in said upper compartment for raking said layer, said rake means including

1. a plurality of elongated agitating members, and
2. drive means for moving said agitating members in a circular, horizontal path while said agitating members extend downwardly into said layer through said exposed upper face of said layer.

28,397

CHUTE SANITIZER AND FIRE EXTINGUISHER

John A. Boyd, 3314 Holloman Road, Falls Church, Va. 22042

Original No. 3,690,560, dated Sept. 12, 1972, Ser. No. 136,381, Apr. 22, 1971. Application for reissue Mar. 6, 1974, Ser. No. 448,691

Int. Cl. B05b *9/00*

U.S. Cl. 239—195 9 Claims

1. Apparatus for fluid treatment of an elongated chute extending between the floors of a multi-story building, said apparatus comprising:

an elongated flexible fluid supply conduit adapted to be connected to a fluid source;

a housing connected to one end of said fluid supply conduit; and

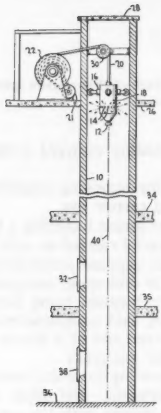
conduit control means disposed adjacent the upper end of said elongated chute for selectively lowering and raising said conduit, and the housing connected thereto, within said elongated chute;

said housing including a chamber which receives fluid from said supply conduit,

a plurality of outlet openings communicating with said chamber to permit separate streams of fluid to exit therethrough and to impinge upon the walls of said elongated chute for fluid treatment thereof,

a tubular flow duct disposed between said chamber and said fluid supply conduit to permit said fluid to be transmitted from said conduit to said chamber through said flow duct,

a chemical storage chamber [surrounding] *communicating with* said flow duct, and



means for [admitting] *transferring* chemical from said chemical storage chamber [into] *to* said flow duct.

28,398

DEWAXING OF OILS BY SHAPE SELECTIVE CRACKING AND HYDROCRACKING OVER ZEOLITES ZSM–5 TYPE

Nai Yuen Chen, Hopewell Township, Mercer County, Stanley J. Lucki, Runnemede, and William E. Garwood, Haddonfield, N.J., assignors to Mobil Oil Corporation

No Drawing. Original No. 3,700,585, dated Oct. 24, 1972, Ser. No. 865,470, Oct. 10, 1969. Application for reissue Apr. 29, 1974, Ser. No. 465,015

Int. Cl. C10g *11/02, 13/02*

U.S. Cl. 208—111 **14 Claims**

1. A dewaxing process for the selective cracking of straight-chain hydrocarbons and slightly branched-chain hydrocarbons from a mixture of the same with compounds of different molecular shapes which comprises contacting said mixture with a crystalline aluminosilicate having an X-ray diffraction pattern as set forth in Table 1 and having pore openings which are of a generally elliptical shape wherein the major axis of said ellipse has an effective size under conversion conditions of between about 6 and 9A. units and the minor axis about 5 A. so that said straight-chain and slightly branched-chain hydrocarbons are capable of entering into the internal pore structure of the aluminosilicate and being converted, said aluminosilicate having a composition, in terms of oxide mole ratios, as follows:

$$0.9\pm0.2\ M_{2/n}O:Al_2O_3:5\text{–}100\ SiO_2:zH_2O$$

wherein M is a cation, *n* is the valence of said cation and z is from 0 to 40.

PLANT PATENTS

GRANTED APRIL 22, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,706
OAK TREE
Milton Baron, Haslett, Mich., assignor to J. Frank Schmidt and Son Co., Troutdale, Oreg.
Filed Oct. 23, 1973, Ser. No. 408,828
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of English oak tree of the species botanically known as *Quercus robur*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a stately tree with a gracefully symmetrical ovoid crown having a height/width ratio of 1.15; main scaffold branches arising in the lower third of the crown, with their trend of ascent averaging 37° from the vertical; the upper two-thirds of the trunk bearing only small branches and, except for position, being scarcely distinguishable from the upper portions of the rugged scaffold branches; sturdy, wide-angle crotches of about 65°; attractive leathery leaves which are dark green and lustrous above, and pale blue-green below; and very scanty fruit production, in some years being none at all.

3,707
OAK TREE
Milton Baron, Haslett, Mich., assignor to J. Frank Schmidt and Son Co., Troutdale, Oreg.
Filed Oct. 23, 1973, Ser. No. 408,829
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of English oak tree of the species botanically known as *Quercus robur*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a narrow pyramidal crown, with a height/width ratio of 1.52, resulting from activity of an unusually strong leader, together with lateral branches less widely diverging (averaging 31° from the vertical) than is typical of the species; exceptional crotch strength from a crown so narrow, which is the result of branches which arch sharply upward from a relatively wide crotch angle of about 55°; light fruit production, in most years amounting to only a few dozen acorns; and ideal suitability for use where the landscape requires a relatively narrow crown with a strong central leader.

3,708
OAK TREE
Milton Baron, Haslett, Mich., assignor to J. Frank Schmidt and Son Co., Troutdale, Oreg.
Filed Oct. 23, 1973, Ser. No. 408,830
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of English oak tree of the species botanically known as *Quercus robur*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an expansive tree with a broadly hemispherical crown having a height/width ratio of 0.76; main scaffold branches all arising in the lower third of the crown, trending upward at about 60° from the vertical; the upper two-thirds of the trunk bearing only small branches and thus playing a minor role in the structural framework of the crown; sturdy wide-angle crotches averaging about 66°; attractive leathery leaves with a faint waxy bloom and being bluish-green on both surfaces; and extremely heavy fruit production which, in some years, amounts to 200 pounds or more.

PATENTS

GRANTED APRIL 22, 1975

ERRATA

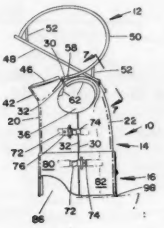
For CLASS	See PATENT NO.
072–310	3,878,720
197–053	3,878,929
241–282.1	3,879,000
200–033 R	3,879,332
360–045	3,879,342
424–003	3,879,510
424–035	3,879,511
424–253	3,879,512
424–277	3,879,513
424–248	3,879,522
424–270	3,879,524
318–221 H	3,879,685
235–061.11 R	3,879,693

PATENTS

GRANTED APRIL 22, 1975

GENERAL AND MECHANICAL

3,878,561
ARMORED JACKET FOR MOTORCYCLE RIDERS
Tadeus Carl Winiecki, 2626 S. Flower St., Lakewood, Colo. 80227
Filed Feb. 19, 1974, Ser. No. 443,910
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 **15 Claims**



1. An armored jacket for protecting a wearer against injury comprising:

a substantially rigid vest shell having head, arms, and torso openings, the shell including front and back plates separable from each other on two pairs of interfacing edges extending generally along the sides and front shoulders of the vest shell;

a rigid collar extending generally divergently from the head opening, the collar including a front portion extending from the front plate and a back portion extending from the back plate;

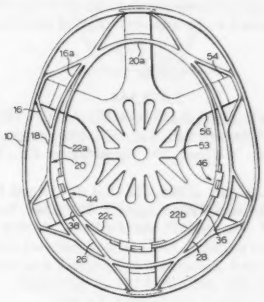
means for mechanically interlocking at least portions of the two pairs of interfacing edges of the front and back plates; means for hinging the front and back plates at the side of the vest between one pair of interfacing side edges;

means for latching together the unhinged pair of interfacing edges of the front and back plates, the interlocking means, front and back plates cooperating to define the substantially rigid vest shell; and

padding means distributed along at least some interior portions of the jacket shell for providing a cushion for the wearer.

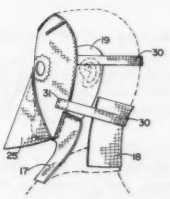
3,878,562
HEAD AND CROWN SUSPENSION FOR PROTECTIVE HELMET
Charles Carlisle T. Lamb, 22 Reynolds St., Oakville, Ontario, Canada
Filed Jan. 2, 1974, Ser. No. 430,297
Claims priority, application Canada, May 17, 1973, 171686
Int. Cl. A24b *3/00*
U.S. Cl. 2—3 A **6 Claims**

1. A head suspension for use within a protective helmet having a shell adapted to encircle a wearer's head and in spaced relationship thereto, said head suspension including: a outer strap composed of a plurality of loops and links, said loops being disposed circumferentially in side by side relationship, successive said loops being connected by a respective said link, said loops adapted to be secured at positions along the inside of the shell in such manner that said loops and links are tightly stretched and such that said links and a portion of said loops define a continuous band which is spaced apart from said shell and which encircles the wearer's head at approximately the level with respect to the wearer's head of a normal hat band, said head suspension further including an inner strap connected to said outer strap and adapted to contact the wearer's head at least in part at said level, and



means for adjusting the effective length of said inner strap to increase or decrease the size thereof.

3,878,563
PROTECTIVE FACE MASK
Hugo E. Pulju, P.O. Box 304, Menahga, Minn.
Continuation-in-part of Ser. No. 108,836, Jan. 22, 1971, abandoned. This application June 7, 1973, Ser. No. 367,709
Int. Cl. A42b *1/06*
U.S. Cl. 2—9 **5 Claims**



1. A protective face mask for snowmobilers and the like comprising:

a. a flexible body portion having side edges and a bottom edge, said body portion being formed to cover substantially all portions of the face of a wearer that are exposed to the weather;

b. a fitted chin portion formed in said flexible body portion

c. eye and breathing openings formed in said body portion;

d. means for securing said body portion in relatively tight abutting engagement with the face of a wearer to substantially prevent exhaled air from passing upwardly under said body portion toward the eye openings;

e. a flexible skirt formed from a generally triangular piece of material, having a pair of side edges thereof affixed to the outer surface of said body portion from an apex of the skirt located between the breathing and eye openings, downwardly and outwardly along an inverted, generally V-shaped seam located on opposite sides of at least the breathing opening, to partially surround the breathing opening, said skirt being larger than the area within said V-shaped seam to thereby form a downwardly opening, generally conically shaped air duct between the skirt and the body portion, said skirt extending down to at least the

chin of the wearer to direct exhaled air away from said eye openings;

f. a flexible front neck portion extending generally downwardly from said chin portion to cover the front of a wearer's neck; and

g. a pair of flexible ear flaps attached to said body portion by joining a first edge of each said flap to a side edge of said body portion generally opposite said eye openings, said flaps extending outwardly from said body portion to cover the ears of a wearer, and a second edge of said flaps being attached to an adjacent edge of said flexible neck piece.

3,878,564

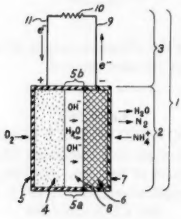
BLOOD AND TISSUE DETOXIFICATION METHOD

Shang J. Yao, 5 Bayard Rd., Apt. 920, Pittsburgh, Pa. 15213, and Sidney K. Wolfson, 205 Buckingham Rd., Pittsburgh, Pa. 15215

Continuation-in-part of Ser. No. 244,071, April 14, 1972, abandoned. This application Apr. 17, 1973, Ser. No. 352,070

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **19 Claims**



1. A method of treating patients having metabolic imbalances comprising the steps of:

a. selecting a patient having relatively high concentrations of oxidizable toxic substances which their bodies are unable to metabolize or remove to substantially non-toxic levels,

b. said toxic substances being present in extracellular fluid in at least one natural bodily fluid zone selected from the circulatory system, the pericardial sac, the abdominal peritoneum, the pleural cavity, and intratissue regions,

c. surgically preparing said patient to provide said extracellular fluid from at least one of said natural bodily fluid zones,

d. contacting said extracellular fluid with an electrochemical cell system adapted to oxidize said toxic substances to non-toxic or metabolizable substances,

e. maintaining said contact for a time sufficient to reduce the amount of said substances to relatively non-toxic substances in said patient, and

f. permitting said detoxified extracellular fluid to return to a physiologic environment in said patient.

3,878,565

VASCULAR PROSTHESIS WITH EXTERNAL PILE SURFACE

Lester R. Sauvage, Seattle, Wash., assignor to Providence Hospital, Seattle, Wash.

Continuation of Ser. No. 168,786, July 14, 1971, abandoned. This application July 25, 1973, Ser. No. 382,631

Int. Cl. A61f *1/24*; **D04b** *1/02*, *9/12*

U.S. Cl. 3—1 **4 Claims**

1. A tubular knitted textile synthetic vascular graft comprising a tubular body provided with a multiplicity of knitted fibrous loops projecting outwardly from the outer surface of said body and presenting a pile mat of filamentary material receptive to tissue ingrowth on said outer surface, said loops

being effective to improve the rate of growth of tissue within said graft.

3,878,566

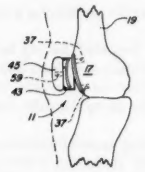
PATELLO-FEMORAL PROSTHESIS

Charles O. Bechtol, Los Angeles, Calif., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed May 8, 1974, Ser. No. 468,095

Int. Cl. A61f *1/24*

U.S. Cl. 3—1.91 **3 Claims**



1. Patello-femoral prosthesis means for replacing the articulating surfaces of the patello-femoral joint, said prosthesis means comprising:

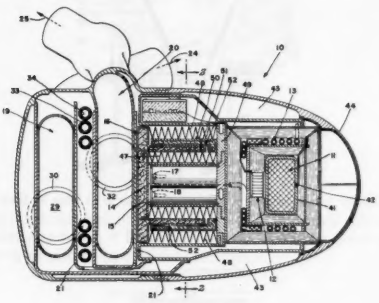
a. a femoral component for attachment to the patellar facet of the femur, said femoral component including a face surface having a trough-like indentation, said trough-like indentation being deeper than the normal trough-like indentation in the patellar facet of a healthy femur, said face surface including a first end and a second end, said first end being elongated, said trough-like indentation extending from said first end to said second end, the bottom of said trough-like indentation of said femoral component being convex as it extends from said first end to said second end, the sides of said trough-like indentation of said femoral component being convex as they extend from the bottom of said trough-like indentation to the top sides thereof; and

b. a patellar component for attachment to the inner surface of the patella adjacent the patellar facet of the femur to coact with said femoral component, said patellar component including a face surface having a crest-like ridge for coacting with said trough-like indentation of said femoral component to allow said patellar and femoral components to move relative to one another while remaining in alignment with each other, said crest-like ridge being higher than the normal crest-like ridge in the inner surface of a healthy patella for preventing any possible dislocation of said femoral and patellar components as they move relative to one another, the sides of said crest-like ridge of said patellar component being concaved as they extend from the top of said crest-like ridge to the bottom sides thereof for coacting with the convex sides of said femoral component.

3,878,567
SELF-CONTAINED ARTIFICIAL HEART

David L. Purdy, Indiana, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 99,635, Dec. 18, 1970, Pat. No. 3,828,371.
This application June 21, 1974, Ser. No. 481,578
Int. Cl. A61f 1/24
U.S. Cl. 3—1.7 2 Claims



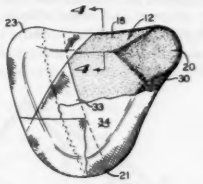
1. A self-contained implantable artificial heart comprising:
a source of electric power;
a reciprocating device, said device having a reciprocally movable portion and a stationary portion;
artificial left and right artificial ventricles arranged so that when said reciprocally movable portion moves in one direction, said ventricles are simultaneously compressed to expel blood therefrom;
electric control circuits comprising sensing means adapted to generate an electrical signal indicative of blood pressure, electronic means converting the blood pressure signal to a filtered smoothly varying potential indicative of average blood pressure, said average blood pressure potential being applied simultaneously to a multivibrator to regulate the frequency of reciprocation of the reciprocating device throughout a range of rate of stroke within the range of healthy pulse rate, and to a control to affect a similar regulation of the stroke of the reciprocating device, whereby the range of pumping capacity of the ventricles is significantly greater than the range of stroke rate;
a housing enclosing said source reciprocating device, control circuits, and ventricles, said housing being of a size to fit within the chest cavity after removal of a major portion of the natural heart.

3,878,568
REVERSIBLE PAD, REMOVABLE COVER AND BREAST FORM COMBINATION

William N. Connelly, Mooadore, Ohio, assignor to Atco Surgical Supply Inc., Cuyahoga Falls, Ohio

Filed Feb. 27, 1974, Ser. No. 446,201
Int. Cl. A61f 1/00; A41c 3/10
U.S. Cl. 3—36 5 Claims

1. A universal style pad for aid in positioning a breast prosthesis on a wearer, who has had a radical right or left mastectomy, and comprising a soft compressible foam plastic layer having a rounded base, a rounded top and a protruding end portion, the layer being beveled downwardly and outwardly from both surfaces around its periphery, said end portion being adapted to extend from a prosthesis in the direction of towards the wearer's adjacent shoulder when on a person having had either a right or a left mastectomy, and a fabric cover means for said plastic layer, and said fabric cover means includes means forming a base pocket thereon and a top pocket which is slanted and overlaps said base pocket at one

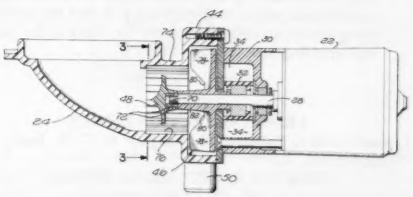


end thereof, a breast form being adapted to be positioned by said base pocket and said top pocket.

3,878,569
SEWAGE TREATMENT DEVICE

Alfred J. Peirish, Jr., Fountain Valley, and Tim M. Uyeda, South San Gabriel, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 2, 1974, Ser. No. 466,134
Int. Cl. E03d 1/00, 11/10
U.S. Cl. 4—77 10 Claims



1. A device for treating sewage or the like comprising:
a housing including a generally cylindrical section and a forward sewage inlet end;
a rotatable shaft coaxially mounted within said cylindrical section;
sewage macerating and conveying means mounted on said shaft adjacent to said inlet end of said housing, said means comprising a tapered auger-like element having a forwardly facing point and a pair of blades formed with spiral-shaped leading edges converging toward said point;
an impeller mounted on said shaft behind said element;
a discharge outlet on said housing in radial alignment with said impeller; and
means for rotating said shaft to cause said element to macerate sewage entering through said inlet end and axially convey said sewage rearwardly toward said impeller, and to cause said impeller to discharge said macerated sewage through said discharge outlet of said housing.

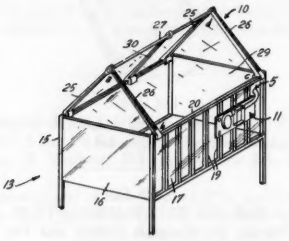
3,878,570
ENVIRONMENTAL CONTROL ATTACHMENT AND CRIB

Charles J. Donnelly, 8606 Horacio Pl., N.E., Albuquerque, N. Mex. 87111

Continuation-in-part of Ser. No. 187,329, Oct. 7, 1971, abandoned. This application June 5, 1973, Ser. No. 367,205
Int. Cl. A47c 27/08
U.S. Cl. 5—97 8 Claims

1. In combination, an apparatus for providing a controlled environment for an infant, including an infant's crib, the crib having a base member and a plurality of opposed side walls attached to the base member, with at least one of the side walls including a plurality of vertical spaced side rails, said apparatus further comprising:

attachment means secured to said crib for substantially enclosing said crib, said attachment means comprising a frame means including at least a plurality of frame members supporting an enclosure, said frame members being structurally adapted and removably secured to said crib adjacent each of the side walls and a canopy secured to said frame members defining the enclosure, said canopy



comprising an impervious sheet and mounted to said frame members arranged to enclose substantially said crib in a substantially airtight manner; and

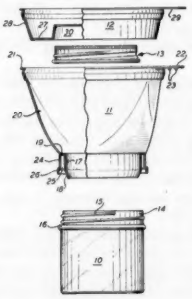
means including a blower and separator secured to said crib and communicating with the enclosure for controlling the environment within said enclosed crib and the enclosure being unsupported at the bottom for lifting of the canopy wall enabling access to the crib.

3,878,571

URINE COLLECTION DEVICE

Leonard Seeley, Palatine, Ill., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Mar. 2, 1973, Ser. No. 337,606
Int. Cl. E03d *13/00*
U.S. Cl. 4—110 **3 Claims**



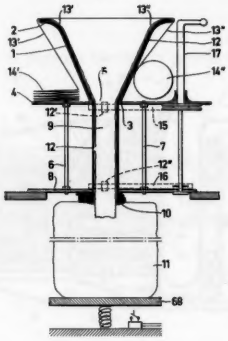
1. A urine collection device comprising a liquid container in the form of a cylindrical jar having an open top, the lip portion adjacent the open top being finished to receive a closure, a funnel having a base adapted to engage said lip portion and an upper opening, the area of said upper opening being greater than that of the opening in the top of the jar, a rigid lip covering said upper opening and removably engaging said funnel, said lid having on its under side means for removably holding a container cap, and a container cap removably held in said holding means, said container cap having a diameter to fit the lip portion of the cylindrical jar but of a diameter less than that of the upper opening in said funnel, said lid providing means for manually transferring the cap into engagement with the lip of the container without manual contact with the cap.

3,878,572

COLLECTING DEVICE FOR SOLID OR LIQUID WASTE MATERIAL

Eleon Gustav Eriksson, Brobacka, S-570 60 Osterbymo, Sweden

Filed Sept. 21, 1973, Ser. No. 399,667
Int. Cl. A47k *11/02*
U.S. Cl. 4—142 **14 Claims**



1. A device for collecting solid and/or liquid waste material comprising a receiving member the inside of which is covered with a thin flexible protective material having a surface that is water-repellent in the direction from the interior of the receiving member, said protective material together with received waste material being movable towards a receptacle positioned below the receiving member, the inner surface of the receiving member being covered with a pliant elastic tubing which is fixed at the upper edge of said receiving member, said elastic tubing extending below the receiving member and passing through a region having a feed-down mechanism to the lower part of said region where said tubing is fixed and where the receptacle is tightly disposed around the lower part of the elastic tubing; the water-repellent protective material running over the upper edge of said elastic tubing down through said tubing and into said receptacle; the feed-down mechanism being provided with an upper and a lower clamping means which in different horizontal planes are firmly attached to the outer side of the elastic tubing, at least one of said clamping means being vertically displaceable relative to the other one, said feed-down mechanism including means for vertically displacing said clamping means relative to one another to effect elastic stretching and return of the tubing, said feed-down mechanism further including means for alternately closing and opening the clamping means synchronously with the vertical displacement of said clamping means to produce a pumping effect operative to feed the protective material and the waste material within the elastic tubing downwardly towards and into the receptacle.

3,878,573

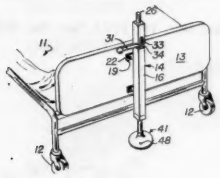
ANCHORING DEVICE FOR HOSPITAL BED

Adrian T. Boudewyn, Daly City, Calif., assignor to Jerry A. Levine, Burlingame, Calif., a part interest

Filed Dec. 28, 1973, Ser. No. 429,112
Int. Cl. A61g *1/02*
U.S. Cl. 5—328 **5 Claims**

1. A device to restrain unintentional movement of a bed or the like relative to the floor comprising a casing formed with a vertically extending first slot, bracket means to attach said casing to said bed, a rod vertically slideable within said casing between an operative and a retracted position, a handle on said rod extending out of said slot for manual movement of said rod between retracted and operative positions, latch means on said handle and said casing to hold said rod in

operative position, and floor-engaging means on the lower end of said rod to secure said rod to the floor, said latch means comprising at least one side slot communicating with the



lower end of said first slot, whereby when said rod is in operative position said handle may be turned to enter said side slot and said rod will not move to retracted position until said handle is turned to its original direction.

3,878,574

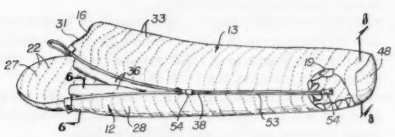
SLEEPING BAG AND METHOD OF FABRICATING SAME

Mark E. Erickson, Oakland, Calif., assignor to The North Face, Berkeley, Calif.

Filed Sept. 24, 1973, Ser. No. 399,689

Int. Cl. A47c *23/00, 27/00*

U.S. Cl. 5—343 **13 Claims**



1. A method of forming a multi-chambered sleeping bag comprising providing a first and a second half of a first cover, forming a first seam joining said first and second halves together along a longitudinal margin of each said first and second halves while attaching to said first seam a first edge of a block baffle positioned along said first seam; providing a third and fourth half of a second cover, congruent to said first and second half, respectively, forming a second seam joining said third and fourth halves together along a longitudinal margin of each of said third and fourth halves; providing a plurality of transverse baffles, attaching a first longitudinal edge of each said transverse baffle transversely across at least one half of said first cover, attaching second and third edge of ends of said block baffle to adjacent transverse baffles where said transverse baffles cross said first seam; attaching a second longitudinal edge of each said transverse baffles transversely across said second cover, attaching a fourth edge of said block baffle to said second seam; providing a fastener having first and second fastener strips, attaching a first edge of each said fastener strip to a second longitudinal edge of each of said first and second halves; inserting heat insulation material into the transverse filler chambers formed by said covers and said baffles through openings along the second longitudinal edges of said first and third halves and said second and fourth halves, and attaching a second edge of each said fastener strip to a second longitudinal edge of said third and fourth halves to close off said openings of said filler chambers.

3,878,575

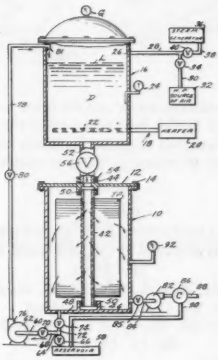
PROCESS AND APPARATUS FOR TREATING TEXTILE MATERIALS

Frederick C. Wedler, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 109,501, Jan. 25, 1971, Pat. No. 3,775,055, which is a continuation-in-part of Ser. No. 746,973, July 23, 1968, abandoned. This application Feb. 1, 1973, Ser. No. 328,699

Int. Cl. B05c *8/02*

U.S. Cl. 8—155.1 **22 Claims**



1. In a process for the batch treatment of textile material with a liquid treating agent including a dye liquor, the improvement comprising: placing the textile material to be treated in an enclosed first zone and applying a substantial vacuum to the first zone to produce a greatly reduced subatmospheric pressure therein; providing the liquid treating agent in a second zone and heating it therein, placing the treating agent in said second zone under a positive pressure at least as great as atmospheric pressure; placing the first zone in communication with the second zone through a relatively large diameter conduit; and effecting a very rapid initial transfer of said treating agent from said second zone through said conduit and into said first zone wherein said treating agent flows through said textile material in an inside-out direction, said transfer taking place at a flow rate of at least about 500 gallons of said treating agent per minute so that said treating agent is uniformly distributed over all or substantially all of the surfaces of said textile material substantially immediately after the textile material is first contacted by said treating agent and so that said surfaces of said textile material are initially exposed to or wetted by the treating agent at uniform or substantially uniform concentration of said dye liquor.

3,878,576

WATER SKI SLALOM COURSE AND METHOD THEREFOR

Jaap Suyderhoud, P.O. Box 2052, Redding, Calif. 96001

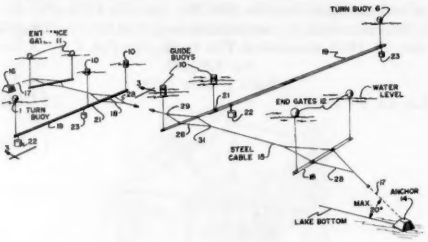
Filed May 20, 1974, Ser. No. 471,565

Int. Cl. B63b *21/52*

U.S. Cl. 9—8 R **14 Claims**

1. A water ski slalom course having turn buoys and guide buoy pairs fixed in a predetermined layout said guide buoys lying along a centerline along which a boat towing the water skier moves said turn buoys being slalom gates for the skier said course comprising: an anchor line extending along the centerline of said course and fixed at both ends; a plurality of rigid cross arm means for spacing the two buoys of each pair of guide buoys from each other a sufficient distance to allow

passage of said boat each of said guide buoy pairs lying in a predetermined plane; a plurality of means for fixing said planes perpendicular to said anchor line; a plurality of beam means each having one end rigidly affixed to said cross arm



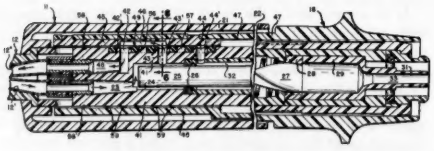
means and colinear therewith and the other end holding down one of said turn buoys said beam means having a positive buoyancy and including negative buoyancy weights affixed to said beam means to submerge them in said water.

3,878,577

VALVE ARRANGEMENT FOR AN HYDRAULICALLY OPERATED HAND APPLIANCE FOR PERSONAL HYGIENE

Pierre J. Jousson, Geneva, Switzerland, assignor to Les Produits Associes, SA, Geneva, Switzerland

Filed Oct. 10, 1973, Ser. No. 405,104
Int. Cl. A46b *13/06*
U.S. Cl. 15—22 R **7 Claims**



1. A hand appliance for personal hygiene, for use with appliance heads requiring alternatively an oscillating drive and liquid pressure pulses, and driven by a source of liquid pressure pulses, said hand appliance comprising

a. an elongated casing forming a handle,

b. flexible conduit means for connecting said casing with said source of liquid pressure pulses,

c. an output member mounted near the front end of said casing for oscillating an appliance head attached thereto and having an opening for supplying liquid pressure pulses to an appliance head attached thereto,

d. an hydraulic motor in said casing actuable by liquid pressure pulses for oscillating said output member,

e. conduit means in said casing for delivering liquid pressure pulses to said output member,

f. control valve means in said casing positioned substantially rearwardly of the front end of the casing and controllable to supply liquid pressure pulses from said flexible conduit means alternatively to actuate said hydraulic motor and to supply the pressure pulses to said conduit means in the casing,

g. said control valve means including an inner member having a plurality of longitudinally separated conduit openings and a longitudinally movable outer valve member having a groove for connecting and disconnecting predetermined conduit openings,

h. a unitary sealing member of resilient material between said inner and outer member having a plurality of apertures registering with said conduit openings,

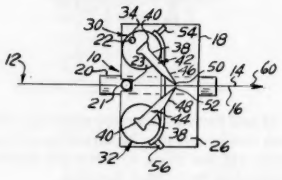
i. and a manually actuable longitudinally movable control member mounted at the front end of said appliance and connected with said outer valve member for actuation of the valve member to alternative positions thereof.

3,878,578

FILM SQUEEGEE

Oldrich Skudrna, 20287 Damman, Harper Woods, Mich. 48225

Filed Dec. 19, 1973, Ser. No. 426,184
Int. Cl. G03d *5/00*
U.S. Cl. 15—100 **10 Claims**



1. A film squeegee adapted to be mounted adjacent the path of travel of a wet moving film for removal of liquid simultaneously from the opposite side surfaces thereof, said squeegee comprising

a supporting member adapted to be mounted adjacent the path of film travel,

a pair of squeegee blade-carrying elements mounted in spaced parallel relationship on said supporting member, at least one of said elements being pivotally mounted on said supporting member,

a pair of substantially sharp-edged squeegee blades of resilient material secured to said blade-carrying elements and disposed in converging relationship toward one another on opposite sides of the path of film travel,

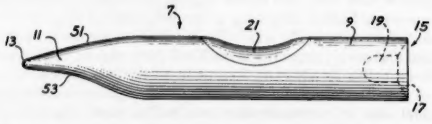
and means for resiliently urging said pivotally mounted element and its respective blade into rotation toward the other element and toward the other blade.

3,878,579

LINE PURGING DEVICE

Ora O. Smith, Richton Park, Ill., assignor to Kraftco Corporation, Glenview, Ill.

Filed Aug. 17, 1973, Ser. No. 389,380
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.06 R **10 Claims**

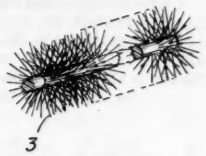


1. A line purging swab comprising a compressible body section, said body section being generally cylindrical in shape, said body section having a tapering section at one end having a blunt nose, said body section having a tail surface at the other end, and said body section having a concavity in its surface to facilitate flexure, the inmost part of said concavity extending transversely of but not completely encircling said body section.

3,878,580
BRUSH

Christian Stöhr, Zeyern; Klaus Grohmann, Susseldorf, both of Germany, and Stegbert O. Wagner, Omaha, Nebr., assignors to Rayette-Faberge, Inc., New York, N.Y.

Division of Ser. No. 797,013, Feb. 6, 1969, Pat. No. 3,743,557.
This application Aug. 15, 1972, Ser. No. 280,843
Int. Cl. A46b 3/00
U.S. Cl. 15—159 A 5 Claims

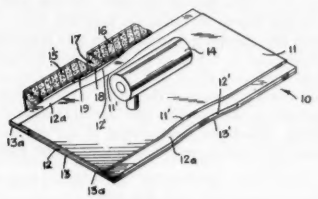


1. A brush comprising an extruded thermoplastic core rod and filament bristles transverse to the axis of the core rod with the proximal ends of the bristles being embedded in the core rod, said core rod having a twist about its axis to uniformly radially deploy said bristles about said core rod axis.

3,878,581
FINISHING TOOLS FOR WALLBOARD SURFACES

Anthony Perna, 118-01 101st Ave., Richmond Hill, N.Y. 11419

Filed Apr. 10, 1974, Ser. No. 459,531
Int. Cl. E04f 21/06
U.S. Cl. 15—235.7 7 Claims



1. A tool for finishing of taped joints between panels of wallboard surfaces comprising a top reinforcing plate having a handle secured thereto, a resilient and deformable shape-conforming blade secured to the underside of said plate, said blade having at least one operative extension area protruding from the corresponding edge of said top reinforcing plate, the edge of said extension area being parallel with said plate corresponding edge, a protective lining on the underside of said blade at least at the extension area whereby when said tool is applied to the taped joint under hand pressure for finishing operations, the operative extension area is cushioned against the said top reinforcing plate and yields to and follows any irregularities along said tape.

3,878,582
CARPET FLUFFING AND DUST-SUCTION DEVICE

Hiroshi Hukuba, Nagareyama, Japan, assignor to Kabushiki Kaisha Hukuba Future Research, Nagareyama-shi, Chiba-ken, Japan

Filed Feb. 11, 1974, Ser. No. 440,993
Claims priority, application Japan, Feb. 16, 1973, 48-18944
Int. Cl. A47l 9/06
U.S. Cl. 15—397 4 Claims

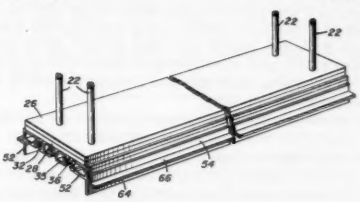
1. A carpet fluffing and dust-suction device, which comprises a hollow axle closed at both ends and having plural axially extending rows of hollow rakes arranged linearly thereon to project radially therefrom at predetermined axially spaced intervals, a pair of wheels rotatably mounted on the two ends of said axle, and a hollow handle fixed to substantially the middle of said axle, said hollow axle, rakes and handle being internally connected with one another at their

joints, and each rake being provided with at least one suction port at either the tip or the vicinity of the tip thereof and having a radial length substantially equal to the radius of said wheel.

3,878,583
ADJUSTABLE HEADER WITH REMOVABLE FACING COVER

Jay A. Smart, 4230 Morning Star Dr., Salt Lake City, Utah 84117

Filed Jan. 7, 1974, Ser. No. 431,486
Int. Cl. A47h 1/04
U.S. Cl. 16—95 R 8 Claims



8. An adjustable header construction including horizontally spaced pairs of stationarily and dependingly supported suspension tension members, a pair of spaced ceiling surfaces defining an elongated downwardly opening recess therebetween in and along which said pairs of tension members are disposed and spaced, an elongated overhead and generally horizontal door track assembly including longitudinal opposite side portions and disposed in said recess, the lower ends of said tension members being secured through longitudinally spaced portions of said opposite side portions of said track assembly, said track assembly including a central longitudinal portion disposed between and at an elevation below said opposite side portions, said central longitudinal portion including support means for guidingly supporting a depending door assembly for movement along said track assembly, a pair of elongated joining members, means removably supporting said joining members from said header construction in position spaced below and extending along said opposite side portions, said joining members including remote side outwardly projecting horizontal flange portions closely underlying the adjacent marginal edge portions of said spaced ceiling surfaces, said joining members including opposite longitudinal marginal portions, said means removably supporting said joining members from said header construction including coacting portions on said opposite longitudinal marginal portions and said opposite side portions of said track assembly as well as the opposite side portions of said central longitudinal portion readily removably supporting the adjacent longitudinal marginal portions of said joining members from the oppo-

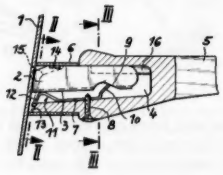
site longitudinal marginal portions of said central longitudinal portion and the remote longitudinal marginal portions of said joining members from said longitudinal opposite side portions of said track assembly outwardly of said tension members.

3,878,584

HANDLE SECURING MEANS

Günter Witte, Attendorn, Germany, assignor to Gebr. Dingerkus, Attendorn, Germany

Filed June 21, 1974, Ser. No. 481,782
Int. Cl. A47b *95/02*; **B65d** *25/28*; **A47j** *45/10*
U.S. Cl. 16—110 A **4 Claims**



1. In a securing means for a handle mounted on the wall on an article, the securing means being of the type that includes a carrier bar affixed to and extending away from the article wall; means defining an insert opening in the handle for receiving the carrier bar; an elongated blocking leaf spring extending within the insert opening in the direction of insertion of the handle onto the carrier bar, the spring having a first engaging portion at one spring end for contacting the carrier bar in a barb-like manner, the spring further having a second engaging portion at another spring end oriented towards the article wall, the second engaging portion being formed of angularly bent parts constituting an elbow having a free external leg extending outwardly and towards the article wall; the improvement comprising

a. an elbow peak forming part of said elbow and having an outer face in engagement with said carrier bar;

b. an oblique surface forming part of said handle and extending from said insert opening towards said article wall;

c. an inner face forming part of said free external leg of said elbow and being in engagement with said oblique surface of said handle; and

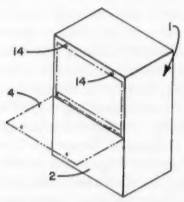
d. externally accessible means for releasably affixing said leaf spring to said handle.

3,878,585

HINGE ASSEMBLY

Howard W. Morris, Zionsville, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 24, 1973, Ser. No. 409,121
Int. Cl. E05d *9/00*
U.S. Cl. 16—128 **4 Claims**



1. An integrally formed hinge for use in pivotally fastening a cover to a flat surface panel including

a generally rectangular opening in the flat surfaced panel,

a tab offset from one edge of the cover and extending outward from the edge of the cover in the same general direction as the surface of the cover through the opening in the panel,

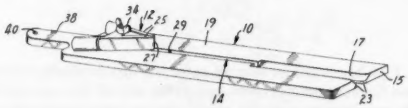
the offset tab having one side undercut with the undercut portion of the tab bent at an angle to the remainder of the tab to thereby prevent the tab from being withdrawn through the opening.

3,878,586

CATFISH CLEANING BOARD

Jerome E. Hoppert, 7410 Main St., Lino Lakes, Minn. 55038, and Thomas G. Wright, 9514 N. Shore Trl., Forest Lake, Minn. 55025

Filed May 17, 1974, Ser. No. 470,718
Int. Cl. A22c *25/00*
U.S. Cl. 17—70 **3 Claims**



1. A catfish cleaning board comprising: a board formed with a longitudinal slot therethrough extending from one end of said board, said slot having a uniform cross-section with edge walls similarly converging from one face of said board to a narrow opening through said board, both edges at the juncture of the open end of said slot and said one end of said board being rounded, said board permitting support of the body of a catfish in an upright position on said one face of said board with the longitudinal centerline of the catfish aligned with the centerline of said slot for cleaning of the catfish including pulling of the skin thereof through said slot, and

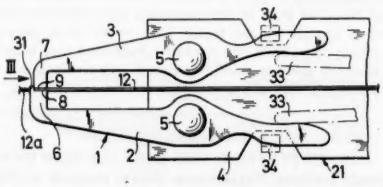
a two-jaw clamp mounted on said one face of said board with the clamping area between said jaws extending perpendicular to the faces of said board, being aligned with said longitudinal slot and facing the open end of said slot to permit clamping of the tail of a catfish supported in an upright position on said one face of said board, said clamp being adjustably positionable in a direction parallel to said slot to accomodate different length catfish.

3,878,587

YARN CLAMP FOR A TEXTILE MACHINE

Jakob Marti, Thun, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

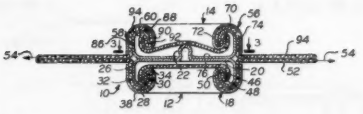
Filed Jan. 19, 1973, Ser. No. 325,166
Claims priority, application Switzerland, Jan. 19, 1972, 00753/72
Int. Cl. F16g *11/00*
U.S. Cl. 24—132 **8 Claims**



1. A yarn clamp for textile machinery comprising two clamping jaws, each jaw having a flat clamping surface for engaging a yarn within a clamping zone, at least one of said clamping jaws being movable towards said clamping surface of the other of said clamping jaws and at least one of said clamping jaws having at least one lateral guide nose outside said clamping zone for guiding the yarn into said clamping zone,

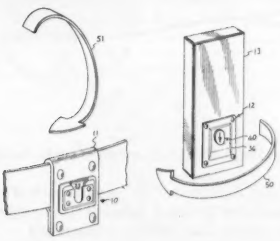
said nose projecting beyond said clamping surface on said latter one clamping jaws to overlap said other jaw, said flat clamping surface being disposed in facing relation to each other on either side of a straight line corresponding to the path of the yarn through said clamp prior to clamping of the yarn and in parallel relation during clamping of the yarn therebetween.

3,878,588
SEPARABLE FASTENER ASSEMBLY
William S. Soto, P.O. Box 392, Hillburn, N.Y. 10931
Filed Feb. 25, 1974, Ser. No. 445,671
Int. Cl. A47b *17/00*
U.S. Cl. 24—208 **14 Claims**



1. A separable fastener for releasably connecting together materials comprising a first fastening element adapted to releasably connect with a second fastening element, said first fastening element having a support wall, connect means on said support wall, and a peripheral wall extending transversely from said support wall; and retaining means movable from a disengaged to an engaged position with said first fastening element, said retaining means comprising a peripheral wall defining an opening sized to receive therein said first fastening element peripheral wall with the material therebetween, said respective cooperating means on said first fastening element and said retaining means peripheral walls engageable with each other when said first fastening element and said retaining means are in the engaged position, at least one of the peripheral walls of said first fastening means and said retaining means peripheral walls and the cooperating means thereon being resilient and having substantially the same normal position when said first fastening element and said retaining means are in the engaged and the disengaged position, said cooperating means extending a distance sufficient to displace said resilient wall and cooperating means from said normal position during movement of said first fastening element and said retaining means to the engaged position.

3,878,589
SEPARABLE FASTENING DEVICE
Henry A. Schaefer, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.
Filed Aug. 1, 1974, Ser. No. 493,507
Int. Cl. A44b *17/00*
U.S. Cl. 24—222 R **4 Claims**



1. A device for removably and pivotally fastening first and second objects together, comprising:

a. a base plate having a surface having a cavity therein, said cavity being bounded by a wall extending from a first point in the vicinity of one edge of said base plate in a first straight line to a second point, extending from said second point along a generally circular arc for approximately 225° to a third point, and extending from said third point along a second straight line that is parallel to said first straight line to a fourth point in the vicinity of said one edge;

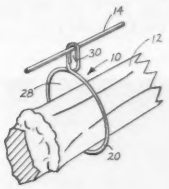
b. a holder plate having an opening therethrough that is bounded by substantially parallel third and fourth straight lines extending from an edge of said holder plate to interior points and by a concave semicircular arc between said interior points, the distance between said third and fourth parallel straight lines and the diameter of said semicircular arc being substantially equal but being less than the distance between said first and second parallel straight lines;

c. means fastening said holder plate on said surface of said base plate in a position so that said fourth straight line substantially coincides with said second straight line, so that said semi-circular arc overhangs said cavity and is concentric with said generally circular arc, and so that said third straight line overhangs said cavity and is substantially parallel to said first straight line;

d. a cylindrical stud adapted to be fastened at one end to said second object, said stud having a diameter slightly less than said distance between said third and fourth straight lines to permit said stud to pass therebetween;

e. and a substantially flat, generally circular flange concentrically fastened to the other end of said stud, said flange having a thickness less than the depth of said cavity and having an edge formed by a straight line chord tangent to said cylindrical stud and by a circular arc between the ends of said chord, said circular arc having a diameter slightly less than the diameter of said circular arc of said cavity so that the circular part of said flange overhangs said stud.

3,878,590
SUSPENSION CLIP
Laurence L. Bolger, P.O. Box 116, Paicines, Calif. 95043
Filed Apr. 5, 1974, Ser. No. 458,297
Int. Cl. A01g *17/08*; **A44b** *21/00*
U.S. Cl. 24—261 C **2 Claims**



1. An improved suspension clip particularly adapted for use in releasibly connecting grapevines to trellis wires comprising: a stressed, resilient body including a midportion of a closed-loop configuration having a substantially circular circumference and substantially lying in a first plane for supporting a mass, such as an arm of a grapevine circumscribed thereby, and a pair of overlapped and interlocked end portions lying in intersected second and third planes angularly related to said first plane defining a closed loop adjacent to said mid-portion of a closed-loop configuration for confining a support, such as a trellis wire, each end portion of said pair of end portions being of a substantially inverted U-shaped configuration and characterized by a base leg integral with said body and a distal leg integral with the base leg and arranged in a mutually spaced, parallel relationship therewith, and having one end disposed in spaced relation with the circumference of said

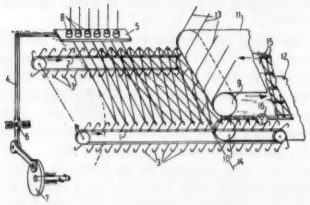
midportion for defining therebetween a throat through which passage of said support is facilitated within which the base leg of the other end portion of said pair of end portions is received.

3,878,591

DEVICE FOR MANUFACTURING A NON-WOVEN, RETICULATE TEXTILE STRIP

Willem Frederik Jense, Middelkampweg 1, de Lutte, Netherlands

Filed June 29, 1973, Ser. No. 375,022
Int. Cl. D04h *3/04*
U.S. Cl. 28—1 CL **5 Claims**



1. A device for the manufacture of a non-woven, reticulate textile strip comprising two longitudinally movable, at least partly parallel conveyors, on which a plurality of thread retaining members are fastened, and at least one changing thread feeder adapted to move between the outer sides of the two conveyors, characterized in that the retaining members are formed by hooks having free ends bent over forwardly and downwardly in the direction of movement of the conveyors, said hooks not exhibiting outwardly projecting parts with respect to the fastening point on the conveyors.

3,878,592

MOLYBDENUM NICKEL CHROMIUM BONDED TITANIUM CARBIDE

Michael Humenik, Jr., Allen Park, and David Moskowitz, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 22, 1971, Ser. No. 210,657
Int. Cl. B26d *1/00*
U.S. Cl. 29—95 D **3 Claims**

1. An admixture for making a hard sintered metallic cutting tool highly resistant to thermal shock and wear, comprising:

a. a base particulate constituent consisting essentially of titanium carbide and being free of detrimental quantities of nitrides and oxides and further being essentially free of dissolved molybdenum, molybdenum carbides, chromium, and chromium carbides,

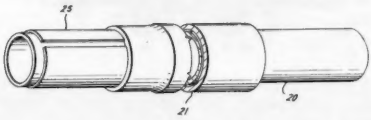
b. a binder constituent comprising 10–50 percent of the admixture and consisting essentially of a particulate having elements selected from the iron group, nickel elemental chromium and molybdenum, said elemental chromium being present in the binder as chromium or chromium carbide compounds or a mixture thereof and being present in a weight amount between 10–40 percent of said nickel, and said molybdenum being present as molybdenum or molybdenum compounds in an amount between 25–70 percent of said nickel.

3,878,593

METHOD OF MANUFACTURING A BIMETAL FINNED TUBE

Tom E. Owen, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed May 1, 1974, Ser. No. 465,742
Int. Cl. B21d *53/02*; **B23p** *15/26*
U.S. Cl. 29—157.3 A **10 Claims**



1. A method of manufacturing finned tubes for heat exchangers, comprising the steps of

assembling a tube of fin stock about a tube liner,

causing the assembly of tubes to pass through an array of finning discs arranged to press the tube of fin stock onto the tube liner while extruding fins thereon progressively from one end to the other thereof, and

restraining said other end of the tube of fin stock against longitudinal movement away from said one end thereof during such passage of the assembly of tubes through said array

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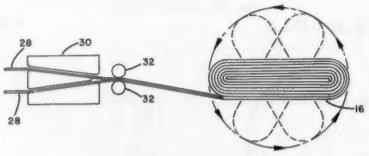
3,878,594

PROCESS FOR MANUFACTURING HUMIDIFIER FILTER MEDIA

Walter A. Minor, Jr., El Dorado, Ark., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 323,187, Jan. 12, 1973. This application Oct. 7, 1974, Ser. No. 512,582
Int. Cl. B23p *15/16*
U.S. Cl. 29—163.5 F **2 Claims**



1. The method of forming a humidifier media bundle comprising:

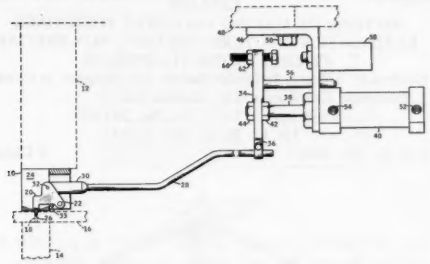
placing sheets of expanded sheet material each of which has been expanded to produce different size openings in the sheet, into face-to-face surface contact; and

folding the sheets of expanded sheet material into a bundle composed of continuous sheets of material with alternate layers of the bundle formed of expanded sheet material having different size openings.

3,878,595
HOLE LOCATOR FOR AUTOMATIC RIVETING MACHINES

Frank A. Boyle, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Mar. 22, 1974, Ser. No. 453,744
Int. Cl. B23P *19/00, 19/04, 11/00*
U.S. Cl. 29—200 P **5 Claims**



1. A pilot hole locating and aligning device which comprises:

a head member adapted to be secured to an associated metalworking machine along a metalworking axis thereof;

means permitting a workpiece having a pilot hole therethrough to be moved substantially parallel to one face of said head, across said metalworking axis;

a bell crank located within said head;

a pin having a diameter substantially equal to the diameter of the pilot hole to be aligned, mounted on one arm of said bell crank and adapted to extend past said one face into contact with a workpiece located adjacent to said one face and into said pilot hole when said pilot hole is aligned with said pin;

connecting means attached to the other arm of said bell crank to rotate said bell crank, to move said pin between a first position extending beyond said one face and a second retracted position within said head wherein said bell crank is away from said metalworking axis;

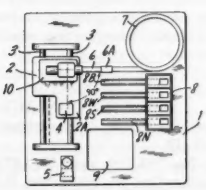
extendable and retractable means to move said connecting means substantially longitudinally to move said bell crank between said two positions; and

electrical switch means activated when said bell crank reaches said second position to allow the associated metalworking machine to commence metalworking functions.

3,878,596
WORKPIECE ASSEMBLING APPARATUS

Shigeru Iwai, Chiba, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Feb. 6, 1974, Ser. No. 439,981
Claims priority, application Japan, Feb. 7, 1973, 48-15278
Int. Cl. B23q *7/10*
U.S. Cl. 29—211 M **2 Claims**

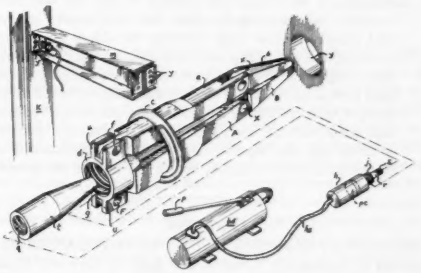


1. Workpiece assembling apparatus comprising, a transfer table operable stepwise in a given direction, a plurality of chutes disposed spaced from each other adjacent a path followed by said transfer table as it travels stepwise, said chutes holding different components to be assembled together into an assembly, a robot on said transfer table having a transfer arm provided with a magnetic chuck and operable to a first position for picking off individual components from said chutes sequentially as said transfer table travels successive steps for placing said transfer arm in alignment with said chutes sequentially and operable to a second position delivering the components sequentially to as assembly jig, an assembly station on said transfer table having an assembly jig receiving the components sequentially for assembly thereof, and a driver unit assembling said components into an assembly.

3,878,597
ALIGNING TOOL FOR ASSEMBLING STEEL GIRDERS

Kenneth A. Hoskins, Rt. No. 1, Goodview, Va. 24095

Filed Nov. 6, 1973, Ser. No. 413,344
Int. Cl. B25b *27/00*
U.S. Cl. 29—271 **2 Claims**

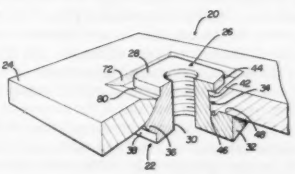


1. A tool for aligning matching holes in the assembly of steel girders and the like comprising a collar having bifurcated extensions on opposite sides thereof, a pair of jaw members, each pivoted at one end in one of said extensions, the opposite end of each said member having a tapered portion pivoted thereto, said tapered portions together being insertable into bolt holes or the like of girders to be assembled by bolting or riveting for alignment thereof, a resilient split ring surrounding said members normally urging them together, a wedge extendable through said collar coacting with and between said members to force said tapered portions apart, a hydraulic cylinder attached to said collar, and a piston therein connected to said wedge for opening said jaw members.

3,878,598
METHOD OF FORMING A NUT AND PANEL ASSEMBLY

John H. Steward, Bloomfield Hills, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 238,162, March 27, 1972, abandoned. This application Feb. 9, 1973, Ser. No. 330,913
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.2 **9 Claims**



8. A method of securing a self-piercing nut to a heavy gauge panel, said nut having a rectangular pilot, a bore extending through said pilot and having an axis, said pilot having a substantially flat rectangular piercing face perpendicular to said

bore axis, a pair of flanges extending laterally from said pilot adjacent the end of said pilot remote from said piercing face and spaced from said piercing face by the side walls of said pilot, grooves undercut in said side walls of the pilot defining relatively massive shoulders overlying said flanges, said side wall grooves terminating generally vertically beneath said massive piercing shoulders, the end walls of said pilot, perpendicular to said side walls, being generally flat and said relatively massive shoulders being longer than said end walls at said piercing face, as measured perpendicular to the bore axis, and a groove in each of said flanges having a flat bottom surface being generally parallel to said flat piercing face and intersecting respective side wall grooves vertically beneath said massive piercing shoulders, including the steps of:

disposing a heavy gauge panel between said piercing face of the nut and a die having a square opening, the length of the sides of said square opening being substantially equal to the length of said pilot shoulders,

moving said die towards said nut and panel to shear a square opening in said panel, and

continuing to move said die, relative to said nut and panel, to force said rectangular pilot into said square opening and closely receive said piercing shoulders therein, deforming and extruding said end walls of the pilot toward said flanges and forming a pair of clinching lips overlying said panel, on the same side of the panel material as said flanges, and deforming and extruding the pierced edges of said panel beneath said shoulders and into said undercut grooves and then against said flat bottom surfaces of said flange grooves to securely retain the nut on the panel.

3,878,599

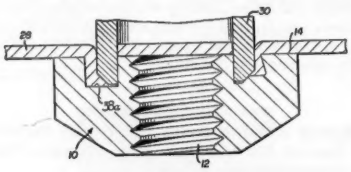
METHOD OF FORMING A NUT AND PANEL ASSEMBLY

Harold A. Ladouceur, Livonia, and John H. Steward, Bloomfield, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 63,316, Aug. 12, 1970, abandoned, which is a division of Ser. No. 841,037, July 11, 1969, abandoned. This application Sept. 14, 1973, Ser. No. 397,559

Int. Cl. B23p *11/00*

U.S. Cl. 29—432.2 **17 Claims**



1. The method of interlocking a nut to a sheet metal panel of a known nominal thickness *t* comprising the steps of engaging in face-to-face relationship with one side of the panel a nut having a groove in the engaged face of the nut spaced from opposite sides of the tapped bore of the nut, the groove being undercut at the side remote from the bore and having a depth less than the width of the groove at said engaged face, and a tool receiving recess in the bottom of the groove at the side of the groove adjacent the tapped bore, and in a single uninterrupted stroke displacing said nut and said panel relative to a tool located on the opposite side of the panel from said nut

a. to cause said tool in cooperation with the engaged face of the nut to shear the panel at opposite sides of said bore along the side of the groove adjacent the bore,

b. to bend into the groove that portion of said panel overlying the groove by bending the same about the shoulder of the groove remote from the tapped bore,

c. to compress the panel metal along the last mentioned shoulder to approximately one-half of its original thickness *t*, and

d. to wedge the panel metal in said groove outwardly from said bore into the undercut remote side of the groove by the advancement of the tip of the tool receiving recess.

3,878,600

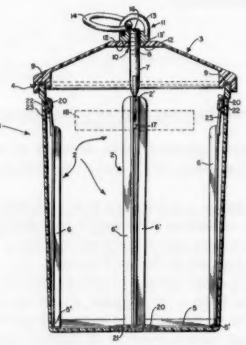
METHOD OF MAKING PRECISELY POSITIONED COMPOSITE STRUCTURE UTILIZING NON-PRECISE FIBERGLASSING TECHNIQUES

Gordon H. Gilbert, Jefferson Parish, La., assignor to Gretna Fiberglass Fabricators, Inc., Gretna, La.

Filed Apr. 2, 1973, Ser. No. 347,044

Int. Cl. B23p *3/00, 19/04*

U.S. Cl. 29—460 **6 Claims**



1. The method of making casing, which includes an outer fiberglass box and an inner metal frame precisely positioned within the box, comprising the following serial steps:

a. providing a gel coated smooth surfaced mold defining the outer surface of the box;

b. forming a fiberglass structure on and about the mold with a chopper gun or other non-precise structure forming technique to produce the basic body of the box;

c. removing the fiberglass box structure from the mold;

d. providing a metal frame having adjustable side members and placing the frame within the fiberglass box structure;

e. positioning the frame within the box with respect to its upper lip by means of a positioning jig;

f. moving the adjustable side members out against the interior sides of the fiberglass box structure;

g. securing and fixing the heretofore adjustable side members to the frame; and

h. adding fiberglass layers over the fixed, heretofore adjustable members in the areas which are in contact with the interior sides of the fiberglass box structure and allowing them to harden structurally integrating and attaching the metal frame to the fiberglass box; whereby a box is formed having a precisely positioned frame therein even though non-precise fiberglassing techniques were used to produce the basic fiberglass box structure.

3,878,601

ISOLATED CONTACT

Michael E. Craft, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

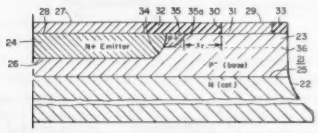
Division of Ser. No. 138,219, April 28, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 428,155

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **4 Claims**

1. A method for making a transistor device, which comprises:

a. providing a collector of one conductivity type,
b. forming a base region of the opposite conductivity type on said collector, said base region having an upper surface oppisite to said collector,
c. forming a region of enhanced conductivity of the opposite conductivity type having a given area and depth into the upper surface of said base region and having a higher dopant concentration than said base region,



d. diffusing an emitter region of said one conductivity type contained within and smaller than the area of said enhanced conductivity region but having a greater depth than said enhanced conductivity region so as to extend beneath said enhanced conductivity region into said base region and to leave a protion of the enhance region surrounding the emitter region at said upper surface, and
e. forming ohmic contact metallization over each of said emitter and base regions, the ohmic contact for said base region being spaced apart from said region of enhanced conductivity.

3,878,602

METHOD FOR FORMING WINDINGS ON ROTORS OF ELECTRIC MOTORS OR THE LIKE

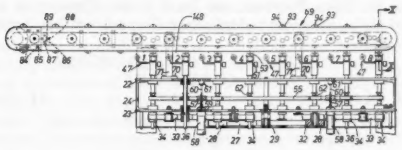
Klaus Schubert, Bottrop, and Klaus Grohmann, Dusseldorf, both of Germany, assignors to Robert Krups, Solingen-Wald, Germany

Continuation of Ser. No. 218,783, Jan. 18, 1972, abandoned. This application May 6, 1974, Ser. No. 467,274

Claims priority, application Germany, Jan. 19, 1971, 2102354

Int. Cl. H02k *15/04*

U.S. Cl. 29—598 **14 Claims**



1. A method of winding rotors of electric machines, comprising the steps of transporting a plurality of rotors each provided with angularly spaced peripheral slots along a single predetermined path in such a manner that the rotors have random angular orientations and are maintained spaced from each other by predetermined distances along the direction of transportation and moving said plurality of rotors to a plurality of substantially identical winding stations located along the length of said predetermined path and spaced from each other by distances corresponding to said predetermined distances; rotating the rotors at said winding stations until all the rotors assume the same angular orientation; simultaneously forming windings on the rotors at said stations in substantially identical manner at all of said stations; and removing all of the thus wound rotors from said stations.

3,878,603

METHOD AND APPARATUS FOR THE SOLDERLESS SPLICING OF MULTI-LEAD CABLES

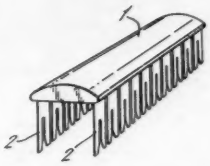
Leo Anker Jensen, Dalvej 15, Viby J., Denmark (8260), and Svend Christensen, Parkvangon 4, Solbjerg, Denmark (8355)

Filed Aug. 21, 1973, Ser. No. 390,215

Claims priority, application Denmark, Aug. 21, 1972, 4126/72

Int. Cl. H02g *15/00*

U.S. Cl. 29—629 **6 Claims**



1. A method for solderless splicing of a multi-lead cable such as a telephone cable, utilizing incisive connectors having depending legs, each provided with a cutting slot sized to receive a cable lead, cut through the insulation on said lead, and make electrical contact with the cable wire, a top member mounting said incisive connectors, and an elongated cable retaining member adapted to receive and hold the stripped end portion of a cable and having spaced transverse slots for receiving and retaining the projecting leads of the mounted cable, said method comprising the steps of mounting the stripped end portion of a cable at one end of said cable retaining member with said stripped end portion in longitudinal alignment with said cable retaining member, bending each cable lead transversely and selectively inserting the cable leads individually within the respective transverse slots at one side of said cable retaining member, forcibly inserting said top member into mounted position upon said cable retaining member in such a manner that each mounted cable lead is engaged by a single incisive connector and received within the cutting slot thereof to make electrical contact therewith, and electrically connecting the mounted cable leads through said incisive connectors to corresponding leads carried by said cable retaining member at the other side thereof to complete the splice.

3,878,604

CAN OPENER WITH AUTOMATIC CUTTER DISENGAGEMENT

Ernest W. Smith, 965 Collington Ave., Baltimore, Md. 21205

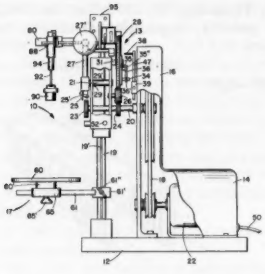
Filed Dec. 10, 1973, Ser. No. 423,495

Int. Cl. B67b *7/38*

U.S. Cl. 30—4 R **1 Claim**

1. A can opening machine comprising in combination:
a. a base;
b. a can opening mechanism including a frame for said mechanism and a single support member for said frame having one end of the support fixed to the base and its opposite end fixed to the said frame;
c. a vertically adjustable can support table for said can carried on said frame supporting member and means for securing the can supporting table in adjustable position thereon;
d. said can opening mechanism having a horizontal rotatable drive shaft in said frame and an electric motor connected to said shaft for rotating the same;
e. a can feed wheel fixed adjacent one end of the drive shaft;
f. a hinged top cutting element hingedly connected to the frame above the can feeding wheel, the hinge point of the cutting element being such that when in one position the cutting element is in position to engage the can top for cutting the same and when in another position is out of

contact with the can top and out of cutting position with the top, and a handle means for rotating the cutting element in and out of cutting and noncutting positions;



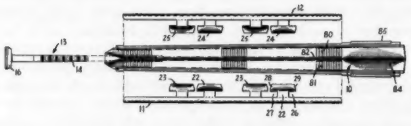
g. a timing wheel rotatable by the drive shaft at a predetermined lower speed than the drive shaft and a releasable selecting means adapted to rotate with the timing wheel for operating the handle means to move the cutting element out of cutting position.

3,878,605

HANDLE CONSTRUCTION

Paul A. Braginetz, Augusta County, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 314,194
Int. Cl. B26b *21/52*
U.S. Cl. 30—85 **9 Claims**



1. A handle construction embodying an elongated main stem of plastic material, and an end element for connecting the handle to an article, said element having a tang extending into a longitudinal opening at said one end of said stem, said tang being generally flat with opposed saw tooth edges, said stem opening having opposed longitudinal ribs complemental to the respective said saw tooth edges, the distance between the opposed inner edges of said ribs being normally less than the overall width of said tang whereby the tips of the saw teeth are embedded in said ribs, said tang being press fitted into said stem, and said ribs being defined by a longitudinally extending recess at each side permitting the plastic material to be laterally deformed into said recesses in the press insertion of the tang.

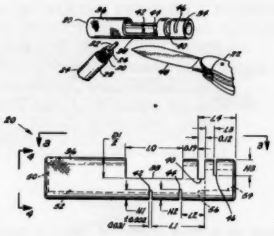
4. A handle construction comprising an elongated main stem having a longitudinally extending opening in the form of a slot with opposed side walls and longitudinally extending outer substantially flat edge strips, an elongated channel shaped member having side flanges engaged within said slot and having a substantially flat outer face, said side flanges each having a plurality of finger locking elements spaced along the respective flange comprising inward continuations of the flange, said finger locking elements each having an opening, the said side walls of said slot having lugs projecting into corresponding said openings respectively of said finger locking elements, said outer face of said channel member merging substantially with said edge strips of the stem.

3,878,606

CABLE GAGE AND CUTTER GUIDE TOOL

Norman L. Hug, Cypress, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Mar. 19, 1974, Ser. No. 452,532
Int. Cl. B21f *13/00*
U.S. Cl. 30—90.1 **10 Claims**



1. For use in processing an end of a coaxial cable including a center conductor and radially successive layers of at least insulation and shield, a concentricity gage and cutter guide tool comprising:

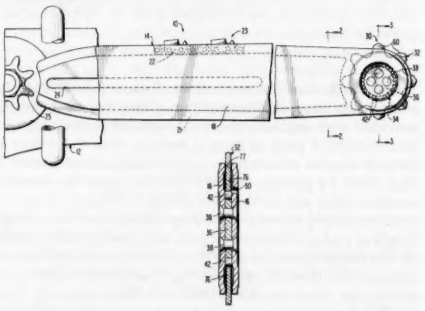
a tubular member including an axial passageway having a larger bore on one side of a cross sectional junction plane through said passageway, said larger bore being of constant diameter throughout its length, and a smaller bore on the other side of said junction plane, said smaller bore being of constant diameter throughout its length, a shoulder being produced in said passageway at said junction plane, a first transverse slot in said tubular member extending a predetermined depth into said larger bore, and a second transverse slot in said tubular member extending a predetermined depth into said smaller bore whereby said shield can be cut by a cutting blade positioned in said first slot when said cable end is inserted into said larger bore to abut on said shoulder and said insulation can be cut by said cutting blade positioned in said second slot when said cable end is inserted into said larger and smaller bores with the cut end of said shield abutting on said shoulder.

3,878,607

CHAIN SAWS

Jack W. Ehlen, Torrance, and Jay R. Bailey, Chatsworth, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed June 27, 1974, Ser. No. 483,820
Int. Cl. B27b *17/04*
U.S. Cl. 30—387 **11 Claims**



1. In a chain saw having manually portable frame means, a cutter bar assembly connected to said frame means and ar-

ranged to receive an endless cutting chain, and power means mounted on said frame means for operable connection to said cutting chain for driving said cutting chain on said cutter bar assembly, said cutter bar assembly comprising:

first and second side plates for supporting and guiding said cutting chain;

said side plates having inner surfaces that are spaced adjacent the outer ends thereof to define a recess;

bearing means mounted in said recess; and

sprocket wheel means mounted within said recess for axial rotation about said bearing means, said sprocket wheel means including:

a hub section, and

a plurality of sprocket teeth projecting radially outwardly from said hub section and being arranged to guide said cutting chain around said outer ends of said side plates; said sprocket wheel and said side plate inner surfaces being dimensioned such that the spacing between said sprocket wheel and said side plate inner surfaces is greater at the root portions of said teeth than at a location remote from said root portions such that the tendency for rubbing to occur between said sprocket wheel and said side plate inner surfaces occurs at said remote location so as to minimize the occurrence of wear and adverse heat-induced metallurgical changes in said tooth root portions.

3,878,608

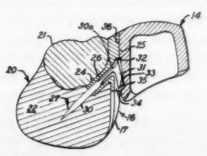
REMOVABLE DENTURE CONNECTION

Arturo Gil-Castillo, San Jose de Ocoa, Dominican Republic

Continuation-in-part of Ser. Nos. 246,064, April 20, 1972, Pat. No. 3,762,049, and Ser. No. 301,352, Oct. 27, 1972, Pat. No. 3,818,594. This application Oct. 1, 1973, Ser. No. 402,285

Int. Cl. A61c *13/22*

U.S. Cl. 32—5 **11 Claims**



1. In a removable denture, the combination of a socket member for attachment on a pier tooth and a tongue part attached to an artificial tooth prosthesis, said tongue part slideably received by said socket member whereby said prosthesis is received in its desired location with said tongue part engaging a wall portion in said socket member, said wall portion lying substantially in a plane extending transversely between the pier tooth and said prosthesis, a tube part in said tongue part which includes a tube portion, a spring member extending from said tube part resiliently bearing against said wall portion, said tongue part including a neck portion, said tube portion extending in one direction away from the surface of said tongue part engaging said wall portion through said neck portion and in the other direction opening through said tube part into said surface, a groove in said surface extending from said opening in a direction parallel to the longitudinal axis of said pier tooth, a spring having two portions, the first of said spring portions being a shank received in said tube portion and the second spring portion extending at an angle from said first spring portion and received at least in part in said groove for resiliently bearing against said wall portion when said tongue part is in said socket, said first spring portion being provided with a resilient deviation and said opening having proximate thereto in said tube part stop means adapted to bear against said deviation whereby said spring is restrained from withdrawal from said tube portion.

3,878,609

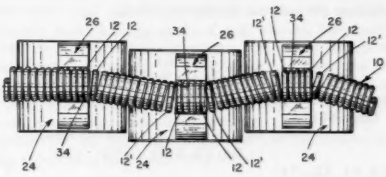
ORTHODONTIC ARCH WIRE

Melvin Wallshein, 8645 Bay Pky., Brooklyn, N.Y. 11214

Continuation-in-part of Ser. No. 300,444, Oct. 25, 1972. This application June 5, 1974, Ser. No. 476,479

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 A **16 Claims**



1. An orthodontic arch wire adapted to be received within a guide channel of an orthodontic bracket mounted on a malocclued tooth, the arch wire comprising a single coiled strand in the form of a tightly wound helix normally having an array of successively abutting and substantially parallel circular turns, and having a cylindrical lumen extending therethrough, said strand when formed into said turns having a predetermined radial thickness, said turns having a common internal dimension of said lumen no greater than twice said predetermined radial thickness of said strand and having a common outer dimension no greater than approximately 0.025 inch to correspond to the guide channel of an orthodontic bracket into which the arch wire is to be received, said helix being made from a material sufficiently elastic to permit bending of the arch wire over a short length thereof by selectively and at least partially separating adjacent turns, and to provide sufficient stiffness over a long length to provide adequate anchoring characteristics for orthodontic devices attached thereto.

3,878,610

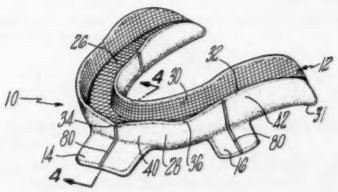
LOW PROFILE DENTAL IMPRESSION TRAY AND SET OF SUCH TRAYS

William Alfred Coscina, 41 Westwood Dr., New Britain, Conn. 06052

Filed Nov. 19, 1973, Ser. No. 417,102

Int. Cl. A61c *9/00*

U.S. Cl. 32—17 **12 Claims**



1. A rigid disposable low profile dental impression tray for accurately registering a dentition for crown and bridgework comprised of a narrow U-shaped substantially planar base of dental arch configuration conforming in the posterior and lateral curvatures to the occlusal surfaces of the dentition and inner and outer walls integral with the base and upstanding from opposite edges thereof to provide a trough of generally U-shaped cross section, an anterior handle integrally projecting outwardly from the base at an obtuse angle to both the base and the outer wall and lateral tabs spaced on opposite sides of the anterior handle extending laterally outwardly from the base at a more acute angle than said anterior handle, said

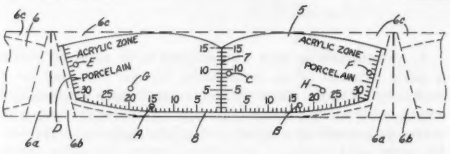
lateral tabs being located at about the bicuspid/molar area on opposite sides of the tray, said anterior handle being broader than the lateral tabs, said anterior handle and lateral tabs facilitating simultaneous substantially planar engagement thereof parallel to the occlusal masticatory surfaces of the dentition for vertical withdrawal of the tray from said surfaces, said inner and outer walls extending from the base sufficiently only to accurately register the dentition and the immediately adjacent periodontal supporting tissue.

3,878,611

DENTURE MEASUREMENT MEANS

Benjamin C. Seaman, 522 Richmond Rd., Richmond Heights, Ohio 44143

Filed Nov. 8, 1973, Ser. No. 413,843
Int. Cl. A61c *19/00*
U.S. Cl. 32—71 **5 Claims**



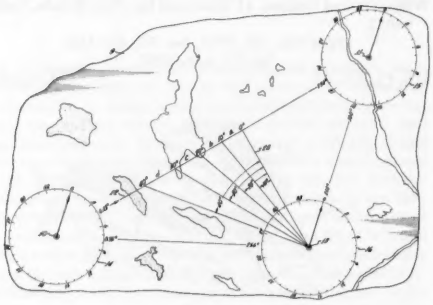
1. In denture measurement means of the class described, in combination, a strip of material divided into individual substantially identical segments, severable for separate use, each such segment including sets of indicia on the face thereof designating a range of lip line, anterior teeth width, cuspid positions, together with areas and indicia determinative of the composition from which the posterior teeth may be made and the size thereof.

3,878,612

ARRANGEMENT FOR OBTAINING DISTANCE TRAVELED AND GROUND SPEED OF AN AIRCRAFT

James B. Reed, 1132 Foothill, Santa Ana, Calif. 92705

Filed Oct. 17, 1972, Ser. No. 298,400
Int. Cl. G06g *1/00*
U.S. Cl. 33—1 SD **13 Claims**



9. A device for use in determining the distance traveled by an aircraft comprising

a first member having indicia thereon designating angular positions around a circle,

a second member,

means connecting said second member to said first member for rotation of said second member relative to said first member about an axis coincident with the center of said circle,

said second member having first indicia thereon indicating a first direction,

and second indicia thereon indicating a second direction at 90° with respect to said first direction,

and table means indicating distances of line segments along a plurality of parallel first lines

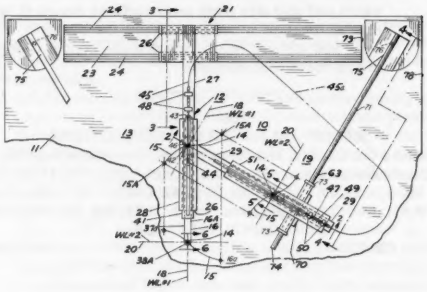
said line segments being defined by the intersection of radial lines extending from a point spaced from said first lines at predetermined angular relationships, and said first lines, as a function of the distance from a particular one of said first lines to said point and said predetermined angular relationships.

3,878,613

AUTOMATIC ORTHOGRAPHIC PROJECTION DEVICE

Wilbur Manning, Rochester, Mich.

Filed Sept. 20, 1971, Ser. No. 181,974
Int. Cl. B43l *13/00*
U.S. Cl. 33—18 C **1 Claim**



1. In an orthographic projection device for determining a third resultant orthographic projected view of an object from two related predetermined orthographically projected views of the object, the combination of,

first predetermined view follower means including a first view line follower element selectively movable at will along the line of the object in one of said predetermined views,

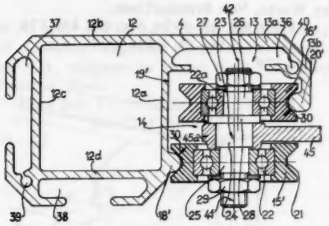
second predetermined view follower means including a second predetermined view line follower element selectively movable along the same line of the object in the other of said predetermined views, said second follower element being connected in orthographic projection relationship with said first follower means,

a third view indicating means including a line tracer member, a third view lateral path wall and a third view linear path wall connected from said first follower element in perpendicular relationship to said lateral path wall so that said tracer member is operable to move an equal distance laterally with said first follower element along said lateral path wall in line tracing relationship with said first follower element when said first follower element is moved, and a force transmitting member connected to said second follower element and said line tracer member so that said tracer member is moved simultaneously along said third view linear path wall a distance equal to the travel of said second follower element in in said second view when said second follower element is moved to automatically produce a third orthographic view of said line compounded from said predetermined orthographic views of said line.

3,878,614
DRAWING BOARD FITMENT

Andre Bruneau, 25-Mont par, Montferrand-le-Chateau, France

Filed July 24, 1972, Ser. No. 274,791
Claims priority, application France, July 29, 1971, 71.28510; Mar. 31, 1972, 72.11547
Int. Cl. B43l 5/00
U.S. Cl. 33—76 R 11 Claims



1. Drawing board fitment comprising at least one elongated rectilinear arm, said arm including a pair of rails extending in parallel spaced-apart relationship and a third rail parallel to and in spaced-apart facing relationship to said pair of rails defining a longitudinal channel-like track therebetween, a carriage movably mounted along said arm including two pairs of first rollers, means rotatably mounting the rollers of each pair in an axially spaced-apart relationship about parallel spaced-apart axes including a common carrying axle rotatably mounted on the carriage and spindles mounted parallel to the carrying axle with at least one of said spindles eccentric with respect to the carrying axle, wherein the carrying axles of said two pairs of first rollers are disposed parallel to one another and spaced-apart along said carriage and each being adjustable by rotation relative to the carriage to an operative position in which one roller of each pair of first rollers is in rolling contact with one rail of said pair of rails and the other roller of each pair of first rollers is in rolling contact with said third rail, at least one second roller and means rotatably mounting same on the carriage about an axis substantially parallel to the carrying axles and spindles of said pairs of first rollers, and wherein said second roller is operative when said pairs of first rollers are in said operative position to be in rolling contact with the other rail of said pair of rails.

3,878,615
DEVICE FOR DETERMINING DIMENSIONAL REDUCTIONS AND ENLARGEMENTS

Francis N. Peterson, Lake Harmony, Pa., assignor to Frederick F. Hafner, Falls Church, Va., a part interest

Filed Mar. 5, 1974, Ser. No. 448,206
Int. Cl. B43l 7/00
U.S. Cl. 33—95 8 Claims

1. A device for determining dimensional reductions or enlargements comprising:

a. a first member having a first pair of straight edges forming an inside 90° angle therebetween,

b. said first member including a face adjacent said first pair of edges,

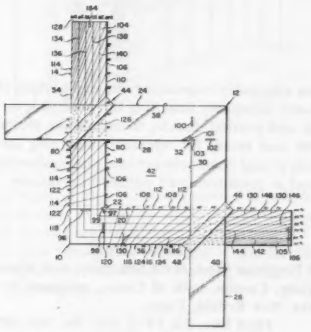
c. a plurality of first longitudinal lines on said face parallel to and spaced from one of said first pair of edges,

d. a plurality of first transverse lines extending from equally spaced positions along said one of said first pair of edges across said face in a fan-like manner to intersect said first longitudinal lines at positions equally spaced along each of said first longitudinal lines and wherein the spacing of said last mentioned positions along different of said first longitudinal lines is equal to the spacing of said positions along said one of said first pair of edges multiplied by differing factors of reduction or enlargement,

e. a plurality of second longitudinal lines on said face parallel to and spaced from said the other of said first pair of edges,

f. a plurality of second transverse lines extending from equally spaced positions along said the other of said first pair of edges across said face in a fan-like manner to intersect said second longitudinal lines at positions equally spaced along each of said second longitudinal lines and wherein the spacing of said last mentioned positions along different of said second longitudinal lines is equal to the spacing of said positions along said one of said first pair of edges multiplied by differing factors of reduction or enlargement,

g. indicia on said face associated with said transverse lines for identifying said transverse lines,



h. indicia on said face associated with each of said longitudinal lines indicating the value of said factors of reduction or enlargement corresponding therewith,

i. a second member having a second pair of straight edges forming an inside 90° angle therebetween, and

j. means adjustably securing said first member to said second member in overlapping arrangement to enclose a rectangular area of adjustable size bordered by said edges,

k. one of said second pair of edges extending across said plurality of first longitudinal lines and the other of said second pair of edges extending across said plurality of second longitudinal lines to serve as indexes for taking readings from the scales formed by said longitudinal and transverse lines.

3,878,616
DRAFTING INSTRUMENT

Daniel Aguilar Arrieta, P.O. (Apartado) 1929, San Jose, Costa Rica

Filed July 17, 1973, Ser. No. 379,996
Int. Cl. B43l 13/20
U.S. Cl. 33—177 5 Claims

1. A drafting instrument for selectively producing a large variety of traceable curves, comprising:

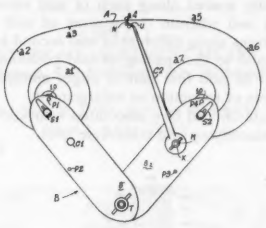
a resiliently flexible spring band having opposite expansile spiral end portions and each end portion having a terminal within the spiral thereof;

two pairs of elongated top and bottom clamping plates which generally coextensive in each pair and each pair providing a respective arm;

means connecting proximal end portions of the pairs of plates together with the plates of each pair spaced apart, and said connecting means including fastening structure operable for adjustably securing the arms in various divergent relative positions;

means connecting the terminal of one of said spiral end portions between the distal end portion of one of said pair of plates, and means connecting the terminal of the other of said spiral end portions between the distal end portions of the other of said pairs of plates;

at least one elongated control lever extending between one of said arms and said band intermediate said spiral portions to maintain the band in a controlled curvature;

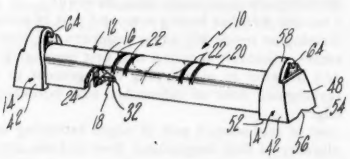


means adjustably connecting one end portion of the control means adjustably attaching the control lever at its opposite end portion directly to one of the plates of said one arm; and means for releasably clamping said spiral protions of said band between said plates whereby to hold the band in predetermined adjusted curvatures.

3,878,617
LINE LEVEL

Robert Ferguson West, West Simsbury, and Maarten Cornelis De Jong, Canton, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Nov. 24, 1972, Ser. No. 309,097
Int. Cl. G01c 9/28
U.S. Cl. 33—369 **3 Claims**

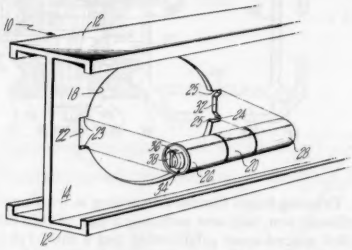


1. A molded line level formed of transparent plastic material and free of machined surfaces comprising a molded one piece level body member having an elongated bridging portion of inverted U-shaped cross section integrally connected to and suspended between a pair of enlarged terminal supporting leg portions of arched configuration, each of said leg portions bearing a plurality of bottom work surfaces formed by a V-groove intersecting a plannar surface of said leg portion, the V-groove being employed when the level is used on a pipe or the like to engage a non-planar surface, said bridging portion including a central bubble chamber extending longitudinally of said bridging portion, said bubble chamber having an inverted U-shaped cross section wherein the sides of the bubble chamber are constituted by the sides of the bridging portion and being provided with an internal bubble contacting top surface having a molded longitudinal curvature with its accuracy controlled at the time of its formation, said central bubble chamber having a pair of spaced end walls extending transversely across the interior of the bridging portion and integrally formed therewith to stabilize the structure and define the ends of the bubble chamber, said end walls being symmetrically spaced from both of said leg portions whereby said chamber occupies less than one half of the levels total length, said leg portions including upstanding hooks having accurately molded line engaging surfaces fixedly positioned relative to said top surface of the bubble chamber extending end plates rigidly stabilizing the arched terminal, said bubble chamber being sealably enclosed with a cover plate engaging the end walls and sides of the bubble chamber.

3,878,618
LEVEL VIAL MOUNT

Philip Martin Freeman, Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 22, 1974, Ser. No. 435,574
Int. Cl. G01c 9/28
U.S. Cl. 33—379 **5 Claims**

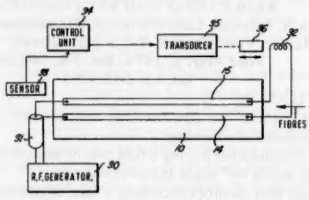


1. A level comprising a frame provided with parallel working surfaces and an interconnecting web, an aperture formed in the web and having a pair of oppositely directed notches for mounting a level vial at a pre-selected relationship relative to the working surfaces with the longitudinal axis of the vial parallel to the plane of the web, a cylindrical projection formed on one end of said vial, one of said notches providing a centrally disposed tapered projection received in said cylindrical projection, a wall closing the other end of said vial and being provided with an integrally formed resilient clip said clip being provided with a notch for spanning the web adjacent the other notch for securing the vial to the level frame.

3,878,619
DRYING OF WOOL SLIVERS

David Lowry Hodgett, Saughall; Harry Fung, Liverpool, and James Lawton, Chester, all of England, assignors to The Electricity Council, London, England

Filed Oct. 25, 1972, Ser. No. 300,551
Claims priority, application United Kingdom, Oct. 25, 1971, 49531/71
Int. Cl. F26b 3/32
U.S. Cl. 34—1 **12 Claims**



3. Apparatus for drying textile fibres consisting of at least one drying section, the drying section comprising a plurality of loop electrodes arranged co-axially with their axis horizontal, radio frequency supply means arranged for energising the electrodes at a frequency above 1MHz with alternate electrodes of opposite polarity, a multipass transport system for carrying said fibres along a path and comprising at least one aperture belt of low dielectric loss material and having three passes extending horizontally below, through and above the

electrodes, means surrounding said electrodes and transport system defining an air passageway, means for directing a stream of hot air through said air passageway, fibre material sensing means at the drying section fibre entry, said sensing means being arranged for producing a control signal indicating the absence of fibre, and means responsive to said control signal operative to switch off the radio frequency supply means and to reduce the speed of traverse of the fibres along said path.

3,878,620

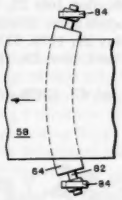
METHOD AND APPARATUS FOR DRYING PAPER

William M. Gallahue, Taunton, Mass., and Gilbert J. Wells, Littleton, N.H., assignors to Mount Hope Machinery Company, Taunton, Mass.

Filed July 17, 1972, Ser. No. 272,354

Int. Cl. F26b *3/32*

U.S. Cl. 34—41 **10 Claims**



1. The method of drying a paper web of indefinite length issuing from a papermaking machine, by means of at least two heated dryer drums and a continuous felt, which comprises the steps of:

arranging said drums to form a path for the paper web to be wrapped successively about a substantial arcuate portion of each said drum, and to form a path for said felt to be wrapped about a substantial arcuate surface portion of each said drum in overlapping relation to said path for the paper web about each said drum;

while extending the paths between said drums of various laterally spaced, longitudinally extending portions of said felt to different lengths changing continuously from the edges of the felt toward its center;

detecting differences in the moisture content of the paper web at central and edge portions thereof;

said extending step being carried out by varying the relative path lengths of said various felt portions in a manner to apply different degrees of tension to said various felt portions and thereby to maintain the detected moisture differences within predetermined limits.

3,878,621

BATHROOM BODY, HAND, AND HAIR DRIER

Dennis L. Duerre, 1513 Yukon Dr., Sunnyvale, Calif. 94087

Filed July 8, 1974, Ser. No. 486,310

Int. Cl. F26b *19/00*

U.S. Cl. 34—90 **5 Claims**

1. A body drying apparatus comprising:

a. an enclosed elongated housing having an air inlet port adjacent an end and a plurality of air discharge openings formed in a side which is in a generally vertical plane and said openings are located in said side a selected vertical distance for effectively blowing heated air over an area about the height of a human being;

b. a squirrel cage turbine mounted on a generally vertical axis within said housing;

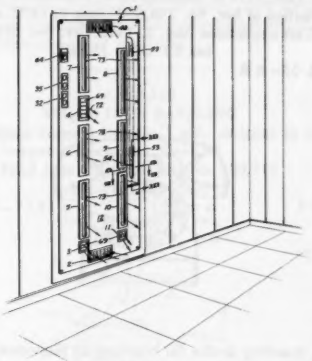
c. a shroud mounted within said housing and forming a passage between said inlet port and said squirrel cage turbine and from said turbine to said discharge openings;

d. an electrical heating element mounted in said passage between said inlet opening and said squirrel cage turbine;

e. motor means for driving said squirrel cage turbine;

f. a manually operable closure means mounted in said air discharge openings for selectively closing said discharge openings;

g. said discharge openings being located in said housing side in a plurality of generally vertical aligned rows;



h. a second squirrel cage turbine mounted in said housing generally parallel to said first squirrel cage turbine; and

i. a second shroud separating said first turbine from said second turbine throughout the length of said turbines and connecting said inlet and outlet opening with said second squirrel cage turbine.

3,878,622

PHOTOGRAPHIC COPYING APPARATUS

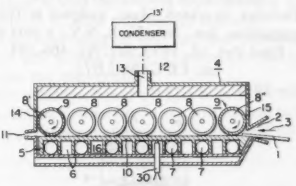
Welhelm Knechtel, Biebertal; Gerhard Petersdorf, Philheim, and Winfried Sandner, Rechtenbach, all of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1972, Ser. No. 303,001

Claims priority, application Germany, Nov. 6, 1971, 2155248

Int. Cl. F26b *13/26*

U.S. Cl. 34—95 **6 Claims**



1. A copy device capable of implementing liquid development, drying and fixing comprising an air tight drying chamber, a heating plate provided in said drying chamber, a plurality of heaters to uniformly heat said plate, a plurality of rolls for transporting a copying material, said rolls each having a fluffy coating material therearound selected from the group consisting of fur, velvet and the like, said rolls being disposed juxtaposed to said heating plate, discharge tube means for sucking the air containing liquid developer vapor in said drying chamber and a condenser for liquefying said liquid developer vapor, whereby a copying material subjected to a fixing operation during the passage through said drying chamber is guide-transported making close contact with said heating plate, said harmful air containing liquid developer vapor in said drying chamber being sucked out by said discharge tube means and the pressure in said drying chamber being main-

tained at a pressure lower than the atmospheric pressure so as to prevent said harmful air from being discharged to the exterior.

3,878,623

DEVICE FOR TEACHING THE OPERATION OF A TELEPHONE

Ruth B. Leff, 3279 N. Sherman Blvd., Milwaukee, Wis. 53216

Continuation of Ser. No. 258,650, June 1, 1972, abandoned. This application Aug. 2, 1973, Ser. No. 384,970

Int. Cl. G09b *19/00*

U.S. Cl. 35—8 R **8 Claims**

1. A teaching device for teaching an individual to operate a telephone, said telephone having ten operating elements and having the numerals **0–9** inclusive associated respectively with each of said operating elements, said device including a visual marking associated with each operating element, each marking being visually distinct from said numerals, each marking being visually distinct from all of the other markings whereby each marking corresponds to one of said numerals, a member separate from said telephone and bearing a series of said markings in a sequence corresponding to a telephone number to be dialed, viewing means for manually isolating each marking on said member, whereby each marking can be separately viewed and the individual can actuate the operating element bearing the marking corresponding to the isolated marking on said member, and indicia on said member indicating the party represented by the telephone number.

3,878,624

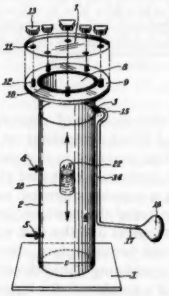
MODULAR DEMONSTRATOR

Victor A. DeFelice, Brockton, Mass., assignor to The Raymond Lee Organization, Inc., New York, N.Y.; a part interest

Filed Oct. 15, 1973, Ser. No. 406,491

Int. Cl. G09b *23/12*

U.S. Cl. 35—19 R **3 Claims**



1. A modular demonstrator for demonstrating a plurality of nature phenomena and scientific principles, said demonstrator comprising

a base member;

a transparent cylindrical tube supported in substantially upright position by the base member and having a plurality of bores formed therethrought at different points thereof and a plurality of petcocks each accommodate in a corresponding one of the bores, the tube having a predetermined diameter and a volume of water therein;

a substantially pressure-tight cover on the open end of the tube;

variable pressure means for selectively varying the pressure of air over the volume of water in the tube; and

a pressure-sensitive capsule of smaller diameter than the tube and having a volume of dyed water therein, said capsule freely floating in the water in the tube.

3,878,625

APPARATUS FOR PLAYING AN EDUCATIONAL GAME INCLUDING APERTURED CODE MEANS

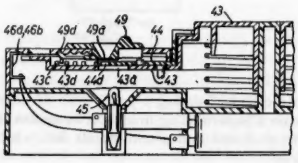
Walter Hesener, 66, Rue de la Prulay, 1217 Meyrin, Geneva, Switzerland

Division of Ser. No. 129,469, March 30, 1971, Pat. No. 3,780,453. This application July 25, 1973, Ser. No. 382,504

Claims priority, application Switzerland, Mar. 31, 1970, 4969; Switzerland, May 29, 1970, 8136; Switzerland, Sept. 5, 1970, 13300; Switzerland, Nov. 20, 1970, 17285; Switzerland, Nov. 30, 1970, 17659

Int. Cl. G09b *3/00*

U.S. Cl. 35—48 R **7 Claims**



1. Apparatus for playing an educational game comprising:

a. a cover;

b. at least one setting means operable from outside the cover to be moved into at least two answer positions, each such answer position being representative of one of several possible answers to a given question and each such setting means including a portion thereof that is capable of transmitting radiant energy;

c. support means associating with said cover and carrying the setting means and constructed to allow the setting means to move into said positions relative to the support means;

d. code bearing means supported by and at least partly concealed by the cover and movable relative to the support means;

e. a plurality of apertures in and defined by the code bearing means, said apertures being arranged in a pattern to constitute a plurality of code means carried by the code bearing means;

f. the setting means being movable between positions where its energy-transmitting portion is respectively aligned and not aligned with an aperture of each said code means at any specific position of the code bearing means relative to the support means;

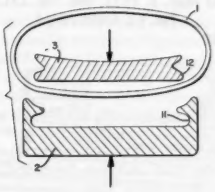
g. means permitting radiant energy to fall on the underside of the code bearing means to pass and to be intercepted according to whether the said energy-transmitting portion of the setting means is aligned or not with an aperture of the code means, passage of said radiant energy then corresponding to positioning of the setting means in an answer-correct position and interception to an answer-incorrect position of the setting means whereby the passage of radiant energy through the aligned apertures and energy transmitting portions results in externally visual signals indicative of correct answers; and

h. indicating means for indicating the position of the code bearing means relative to the support means.

3,878,626
DETACHABLE SOLES

Claude-Roger Isman, 4, rue Lamblardie, Paris, France

Filed May 8, 1972, Ser. No. 254,774
Claims priority, application France, May 18, 1971, 71.17889; Jan. 25, 1972, 72.02299
Int. Cl. A43c *13/00*
U.S. Cl. 36—15 3 Claims



1. A shoe comprising an outer sole, an inner sole and a flexible upper;

said outer sole having an upstanding flange formed on the upper peripheral edge of said sole, an inwardly directed rib on said upstanding flange forming a recess thereunder; said inner sole having a thickness approximately equal to the height of the upstanding flange on said outer sole, a recess formed in the peripheral edge face of said inner sole with flanges above and below said recess to form said recess;

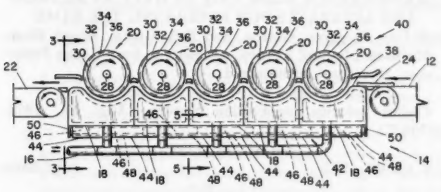
the recess and flanges of said inner sole being complimentary to the rib and recess on said outer sole and received therein;

the lower outer portion of said flexible upper positioned between the said recess and flanges of said inner sole and the said rib and recess of said outer sole and secured in position by the interfitting of said recesses, flanges and rib of said soles.

3,878,627
STEAM CHEST INSULATION MEANS FOR COMMERICAL ROLL-TYPE IRONING MACHINE

Dan D. Mazzolla, 2464 Raleigh Dr., York, Pa. 17402

Filed Sept. 9, 1974, Ser. No. 504,241
Int. Cl. D06f *63/00*
U.S. Cl. 38—56 7 Claims

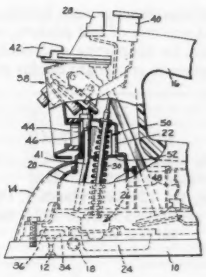


1. A commercial roll-type ironing machine having a steam chest in the lower portion thereof, in combination with insulation means to prevent excess heat losses from radiating from the underside surface of said steam chest, said insulation means comprising a plurality of rectangularly shaped insulation members of uniform thickness and held in a substantially horizontal parallel position immediately beneath said underside surface of said steam chest by means of a plurality of elongated L-shaped bracket members affixed in tandemly abutting relation to each other to the underside surface of said steam chest in a series of parallel rows, said parallel rows being laterally deposed between opposite edges of the underside surface of said steam chest with opposite parallel rows having the L-shaped bracket openings of said bracket members respectively facing each other to form channels to receive said insulation members slidably in abuttable contiguous relation, one to the other, and retained by said parallel facing L-shaped openings of said bracket members, relatively thin sheets of heat-reflective members positioned immediately below the underside surface of said insulaton members and the opposite edges of said reflective members being longitudinally secured within said L-shaped bracket members by the lower flanges thereof with the connecting section between the respective flange sections of said L-shaped bracket members vertically depending from the underside of said steam chest surface and in continguous contact with the respective opposing end insulation members of each of said rows.

3,878,628
STEAM IRON BAFFLING

Harold William Gowdy, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.

Filed June 19, 1974, Ser. No. 480,716
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.82 5 Claims



1. In a steam iron having an enclosed water tank with a riser portion at the forward end and a fill opening into said portion to fill the tank, the improvement in means to prevent sudden water expulsion comprising,

a single baffle means disposed substantially completely in said riser including a horizontal plate across the riser bottom and having apertures therein,

said plate having upstanding sides thereon and open at the front to align with the fill opening,

said sides extending up into said riser portion, and

each side having a trailing extension folded door-like into the riser portion,

said extensions being left ajar to provide fluid communication between the riser portion and baffle interior to prevent expelling of water out said fill hole.

3,878,629
FRAME FOR SUPPORTING A NEEDLEWORK PROJECT

John R. Grube, Waterville, Ohio, assignor to General Mills Fun Group, Inc., Toledo, Ohio

Filed Aug. 29, 1974, Ser. No. 501,473
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.91 5 Claims

1. An open rectangular frame for supporting a needlecraft project during preparation and for displayiing the finished project, said frame comprising,

a. a border member defining an opening across which a fabric is stretched during preparation and after completion, said border member having a cross section providing

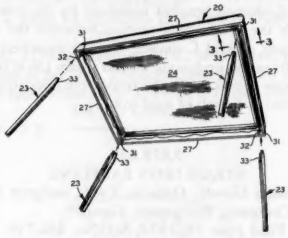
1. A contoured front face bordering the fabric,

2. a rearwardly extending perimeter skirt at the outer side of said front face,

3. a rearwardly extending rib that is parallel to and spaced inwardly from said skirt and

4. an undercut lip extending inwardly from the base of said rib and meeting the inner edge of said front face,

b. a plurality of removable retainers adapted to embrace the edges of said fabric around said ribs along the sides of said border member,



c. a rearwardly open pocket at each corner of said border member that is defined by said skirt and extensions of said ribs,

d. a plurality of strut-like legs each having an end adapted to be inserted into one of said pockets, and

e. bracket means for supporting said border member and the fabric therein in an upright display position.

3,878,630

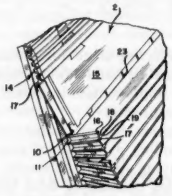
FILING SYSTEM

Romeo T. Proulx, Long Island City, N.Y., assignor to Barry Wright Corporation, Watertown, Mass.

Division of Ser. No. 121,106, March 4, 1971, Pat. No. 3,751,837. This application Apr. 5, 1973, Ser. No. 348,177

Int. Cl. B42f *17/00*

U.S. Cl. 40—78 **3 Claims**



1. In a card registry system having a plurality of substantially rectangular dividers with opposed end rails of appreciable thickness and sheets having ends connecting the end rails, the improvement comprising:

a. means whereby said dividers are pivotally arranged in uniformly laterally staggered parallel relation for pivoting movement about parallel horizontal axes adjacent their lower edges through an acute angle to either side of the vertical, said laterally staggered relation being in the same direction as said horizontal axes;

b. each of said end rails at both ends of each of said sheets comprising:

1. a first section extending in a direction inwardly of the associated end of the sheet on one side thereof and parallel thereto,

2. a second section extending in a direction outwardly of the associated end of the sheet on the opposite side thereof and parallel thereto, and

3. a third section connecting said first and second sections together in spaced relation to provide said thickness; and

c. the first and second sections of each of said end rails thereby being laterally offset from each other in a direction parallel to said horizontal axes with the first section of each end rail aligned with the second section of the adjacent end rail on the next adjacent divider whereby the overall outer boundary defined by all of said dividers is rhomboid in shape.

3,878,631

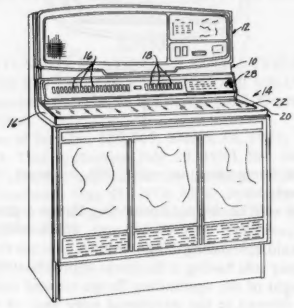
PROGRAM HOLDER FOR A JUKE BOX OR THE LIKE

James T. Mileham, Tonawanda, N.Y., assignor to The Wurlitzer Company, Chicago, Ill.

Filed Mar. 3, 1972, Ser. No. 231,476

Int. Cl. G09f *19/14*

U.S. Cl. 40—137 **3 Claims**



1. A juke box having a plurality of records therein to provide musical selections to a user, and a plurality of indicia bearing members corresponding to said plurality of records so that the musical selections on the records can be identified by a selection code, and selector means to effect selection of the desired record after it has been identified by the indicia bearing members, the improvement therein comprising cover means positioned over said indicia bearing members, said cover means being opaque to a viewer when said viewer is beyond a predetermined distance from the juke box, and view control means comprising louver means associated with said cover means and arranged to appear transparent as a result of advance of said viewer toward the juke box to within a predetermined distance for visual display of said indicia bearing members through said cover means.

3,878,632

TRANSPARENCY SLIDE UNIT AS WELL AS METHOD AND APPARATUS FOR PRODUCING THE SAME

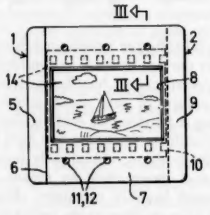
Rolf Uno Berggren, Gotene, and Erik Gustav Birger Blom, Mariestad, both of Sweden, assignors to Sven Göran Pettersson, Oberageri, Switzerland

Filed Aug. 13, 1973, Ser. No. 387,550

Claims priority, application Sweden, Aug. 17, 1972, 10704/72

Int. Cl. G09f *1/12*

U.S. Cl. 40—152 **3 Claims**



1. A substantially rectangular transparency slide unit for use with projectors and viewers which consists of a film transparency mounted in a centrally located window opening between a first frame half and a second frame half,

A. each frame half being identical in the following respects:
1. being a separate plate-like member that is composed of one piece of plastic,
2. having a rectangular exterior configuration defined by a first longitudinal exterior edge, a second longitudinal exterior edge of equal length, and upper and lower transverse exterior edges connecting the ends of said longitudinal exterior edges, the length of said longitudinal exterior edges being longer than said transverse edges,
3. having a rectangular opening disposed interiorly of said longitudinal and transverse edges and having a first side edge paralleling said first longitudinal exterior edge and a second side edge paralleling said second longitudinal exterior edge, as well as a top edge and a bottom edge,
4. being substantially identical to each other as far as both the exterior configuration and the size of the interior rectangular opening is concerned,
5. having a thickened strip-like marginal portion
a. that is disposed only along said first longitudinal exterior edge,
b. that has a thickness which is about twice the thickness of the remainder of the frame half,
c. that has a width that approximately corresponds to half the difference between the length of a longitudinal exterior edge and the width of the transparency that is mounted in the film unit,
d. that forms a shoulder that is stepped inwardly and downwardly towards said first side edge of said rectangular opening,
6. the second side edge of said rectangular opening being closer to said second longitudinal exterior edge than said first side edge of said rectangular opening is to the first longitudinal exterior edge of each frame,
7. having a facing surface that comprises
a. the area from said top edge of the rectangular opening to said upper transverse exterior edge,
b. the area from said bottom edge of the rectangular opening to said lower transverse exterior edge,
c. the area from said first side edge of the rectangular opening to the step formed by the shoulder, and
d. the area from said second edge of the rectangular opening to said second longitudinal exterior edge,

B. said first and second frame halves being pressed together so that the rectangular opening in each frame half coincides with the rectangular opening in the other frame half,
1. said first and second frame halves being oriented 180° with respect to each other in their pressed together position,
2. said first and second frame halves having their facing surfaces substantially covering each other,
3. the second longitudinal exterior edge of each frame half being disposed closely adjacent the step formed by the shoulder of the other frame half,

C. a film transparency mounted between said first and second frame halves so that the image thereon is exposed within said rectangular opening, one side edge of said film transparency being disposed closely adjacent to the step formed by one shoulder of one frame half and the other side edge of said film transparency being disposed closely adjacent to the step formed by the shoulder of the other frame half,

D. peg-like projections extending outwardly from at least one facing surface and consisting of
1. a first row disposed above and parallel to said top edge of the rectangular opening,
2. a second row disposed below and parallel to said bottom edge of the rectangular opening,
3. said first and second rows being spaced apart a distance which equals or only slightly exceeds the distance between the top and bottom edges of the film transparency,
4. no peg-like projections or any other projections positioned in the space between said first row and said second row,

E. a plurality of holes in the facing surfaces opposite said peg-like projections each hole having a diameter large enough to permit the passage of said peg-like projections therethrough,

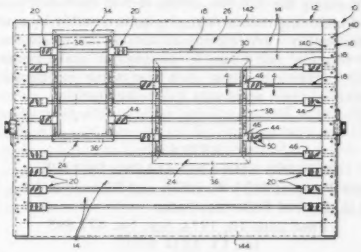
F. the outer end of each peg-like projection having a dimension perpendicular to its axis which is greater than the minimum diameter of the hole through which it has passed whereby the two frame halves are secured together against ordinary manual disengagement.

3,878,633

ART STORING AND DISPLAYING PANELS FOR ART DISPLAY VEHICLES

Joseph E. McWilliams, 1345 Canterbury Ln., Glenview, Ill. 60025

Continuation-in-part of Ser. No. 350,037, April 11, 1973. This application Aug. 27, 1973, Ser. No. 392,063
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 **7 Claims**

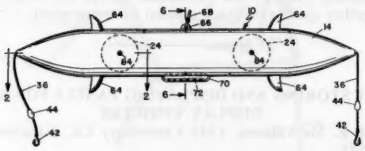


2. An art display arrangement for removably mounting framed pictorial art for storage and display purposes, said arrangement comprising:
a panel comprising:
a plurality of horizontally disposed elongate rectilinear elements fixed together in parallel coplanar closely spaced relation in which adjacent of said elements are uniformly spaced apart to define operating ways of uniform width therebetween,
and means operable in selected of said operating ways for cooperation with the sides of the art frames for securing the frames to the panel at selected positions along said operating ways,
said securing means comprising bolt means proportioned to be freely received through the respective mounting ways and including means for anchoring same to the art frame and means for tensioning said bolt means against one or more of those of said elements that define the mounting way in which said bolt means are respectively received,
said securing means on release of said tensioning and anchoring means being freely movable longitudinally of the operating way in which same is received for application to framed art sections of diverse sizes disposed at random positions on said panel,
with the frames of the art each including:
a rearwardly facing spacer structure disposed along either side of the respective frames and cooperable with said anchoring means of the respective securing means for securing the individual frames to the panel on actuation of said tensioning means.

3,878,634
FLOATING FISHING DEVICE

Jacob R. Quimpo, 3406 Mt. Aachen Ave., San Diego, Calif. 92111

Continuation-in-part of Ser. No. 342,793, March 19, 1973, abandoned. This application Mar. 20, 1974, Ser. No. 452,744
Int. Cl. A01k 93/00
U.S. Cl. 43—15 7 Claims

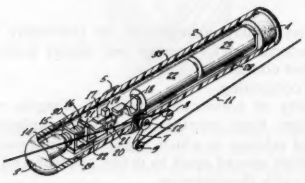


1. A floating fishing device comprising:
a. a buoyant body;
b. a reel rotatably mounted within the body;
c. a fishing line secured to said reel and extending externally of the body;
d. means to bias said reel for rotation in one direction to wind up said line;
e. releasable friction brake means engaging said reel for preventing the rotation of the reel in operative position and including means engaging and operable by said line when under a predetermined tension to release the reel for rotation, and means for biasing said brake means into reel engaging position such that same is operative to brake said reel upon said line being slack.

3,878,635
FISHING ROD SIGNALLING DEVICE

Raymond Trosper, 2137 W. Olive, and Richard E. Nixt, 1130 W. Ash, both of Fullerton, Calif.

Filed June 10, 1974, Ser. No. 477,695
Int. Cl. A01k 97/12
U.S. Cl. 43—17 1 Claim

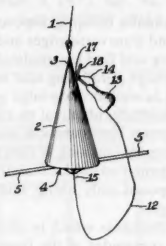


1. A signalling device used on a fishing rod comprising:
a housing;
said housing having means for effecting carriage thereof by said fishing rod, and having chamber means for replaceably supporting bi-terminal electrical batteries and lamp; magnetic switch means responsive to magnetic signal means;
said magnetic switch means effecting an electrically conducting engagement between said batteries and said lamp to produce a sensible signal; wherein
said magnetic signal means include means selectively adjustable for infinitely controlling the movement thereof, and comprises a rotatable pulley system having a magnetic pulley and a simple pulley engaging fishing line of said fishing rod;
said selectively adjustable means comprises a slidable member in captive engagement with said carriage means and said pulley system, said engagement compressibly maintained by spring means there-between.

3,878,636
STILL FISHING LURE

Ernest R. George, Essex, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 28, 1974, Ser. No. 447,243
Int. Cl. A01k 93/00
U.S. Cl. 43—42.74 1 Claim

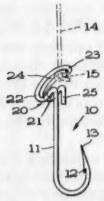


1. A still fishing lure adapted to be tied to a fishing line, said fishing lure comprising
a float body removably affixed to a fishing line, the float being substantially conical having an apex and a base and being removably affixed to the fishing line at its apex and having a pin extending therefrom adjacent said apex for supporting a weight;
a substantially rod-like substantially horizontal spreader arm affixed to the base of the float and having spaced free ends;
a pair of fish hooks each affixed to a corresponding free end of the spreader arm; and
a sinker line having a weight at the free end thereof and affixed at the other end to the base of the float, the weight having a securing element for the sinker line provided with a loop whereby it is supported by the pin extending from the float when the float is thrown into a body of water, the float floating under water due to the pull of the weight on the sinker line and the weight slipping off the pin when the float is in the water.

3,878,637
QUICK CHANGE FISHHOOK

Alva E. Flower, 603 S. 14th Ave., Bozeman, Mont. 59715

Filed Apr. 26, 1974, Ser. No. 464,643
Int. Cl. A01k 91/04
U.S. Cl. 43—44.83 6 Claims



1. A hook, for connection to a line with a knot near its end, comprising
a shank with a hooked end on one end thereof,
and a C-shaped structure with a slot therein on the opposite end of said shank to hold the knot within said structure with the line passing through said slot

said C-shaped structure including

a pair of C-shaped wire forms located adjacent each other and connected together at one end forming said slot between them which is closed at the connected end and open at the other end,

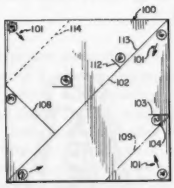
said pair of C-shaped wire forms shaped so as to have their closed end at the farthest distance from said hooked end of said shank whereby the knot slidable in said slot moves toward the closed end of said slot under tension of the line when pulled in a direction away from said hooked end.

3,878,638

BLANK AND METHOD USING INDICIA FOR DIRECTING THE MANNER AND SEQUENCE OF FOLDING

Ranana Benjamin, 196 Myrtle Dr., Great Neck, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,909
Int. Cl. A63h *33/16*
U.S. Cl. 46—1 L **13 Claims**



1. An article of manufacture for use in constructing a three-dimensional object by folding and creasing, comprising a manipulatable blank of foldable and creasable material having a pair of surfaces and bearing means for directing a user in manipulation of said blank, said means comprising a plurality of mutually registerable indicia pairs, with at least one said indicia pair on each of said surfaces, a plurality of said indicia pairs comprising a first pair member positioned at a first predetermined location on one of said surfaces of said blank and a second pair member registerable with said first pair member and positioned at a second predetermined location on the same surface of said blank, said indicia pairs being sequentially coded for guiding a user to manipulate said blank according to a predetermined order of steps corresponding to a sequence of foldings and creasings which result in the construction of the object, the corresponding pair members of certain of said pairs being juxtaposed one over the other in the final article made by folding and creasing said blank, whereby said three-dimensional object may be constructed by superposing one member of each of said indicia pairs over the other member of the same pair.

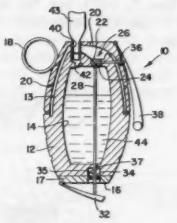
8. The method of constructing a three-dimensional article from a blank of foldable material which has a pair of surfaces and a series of sequentially coded pairs of mutually registerable indicia thereon in predetermined locations on both of said surfaces, a plurality of said pairs being on the same surface of said blank, said method comprising the steps of manipulating said blank to cause the mutually registerable indicia of the sequentially first pair of said series to be placed in superimposing contact with one another, and creasing said blank along a line transverse to the direction of said manipulation, then manipulating said blank to cause the mutually registerable indicia of the sequentially second pair of said series to be placed in superimposing contact with one another.

3,878,639

TOY HAND GRENADE

Lorne J. Scheelar, and Linda Ann McGeorge, both of Markham, Ontario, Canada, assignors to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed May 24, 1974, Ser. No. 472,961
Int. Cl. F41b *15/00*
U.S. Cl. 46—1 R **5 Claims**



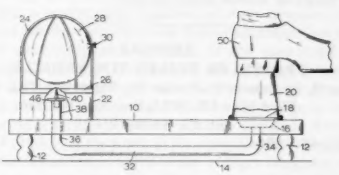
1. A toy grenade comprising a hollow body having a weighted bottom, a container in said body; said body having filling means including an inlet communicating between the body exterior and the container for introducing in said container a liquid and a gas for raising the pressure therein to above atmospheric pressure; at least one liquid spray nozzle for spraying said liquid outside said body; valve means connecting said container with said nozzle; releasable lock means positively holding said valve means in closed position but manually releasable to allow opening thereof; actuating means connected to said valve means for opening same and releasing pressurized liquid to said nozzle; said actuating means including an external pin pivoted to the bottom of said body and said filling means including a filler valve between said inlet and said container for filling same with liquid and gas.

3,878,640

NOISE PRODUCING AMUSEMENT DEVICE

Charles E. Kauffman, 406 Locust St., Hanover, Pa. 17331

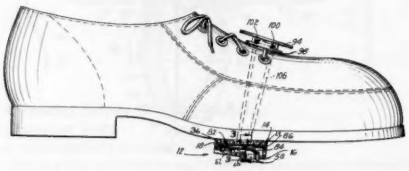
Filed Sept. 9, 1974, Ser. No. 504,251
Int. Cl. A63h *3/06*
U.S. Cl. 46—88 **5 Claims**



1. A device utilizing a ballon and crushable cup to make a series of noises for amusement and comprising in combination, a base member having a recess extending downward from the upper surface thereof in use, a conduit having an open end positioned substantially vertically in use in laterally spaced relationship to said recess in said base member and the other end of said conduit communicating with said recess, means adjacent said open end of said conduit to support an inflated toy ballon with one surface area thereof adjacent said open end of said conduit, a projectile mounted piston-like in the said open end of said conduit and having a piercing point extending upwardly therefrom, and a crushable cup positionable in inverted manner over said recess and cover the same, whereby when a sharp blow is struck against the uppermost end of said inverted cup a first amusing noise will be created and the crushing of said cup discharges air from the cup through said conduit and against said projectile to project the

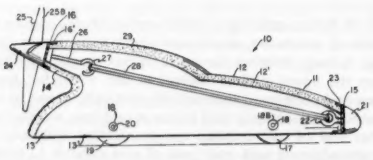
point of said projectile quickly against said ballon and burst it, thus creating a second amusing noise.

3,878,641
STEP ACTUATED NOISE MAKER AND MEANS FOR ATTACHMENT TO A SHOE
Sid Noble, West Orange, N.J., assignor to Mego Corp., New York, N.Y.
Filed Dec. 7, 1973, Ser. No. 422,786
Int. Cl. A63h *5/00*
U.S. Cl. 46—175 R **3 Claims**



1. An actuateable noisemaker which can be selectively secured to a shoe so as to be step actuated comprising a housing, said housing including a first section and a second section, said first and second housing sections being hinged to each other, said first and second housing sections being secured to each other so as to define a closed interior, a cricket, said cricket including a leaf mount and a leaf, said cricket being located in said closed interior, means integral with said second housing section for preventing said cricket from freely moving in said interior, said second housing section including a wall, an opening extending through said wall, a button actuator, said button actuator including a first section and a second section, said first section of said button actuator being located in said interior and abutting said leaf and having a larger cross section than said button actuator second section, the second section of said button actuator extending through said opening and being external of said interior, a securing means adapted to be placed on the upper portion of a shoe, elastic retaining means attached to said securing means and attached to said housing whereby said securing means can be placed on the upper portion of a shoe and the housing on the sole of the shoe and as the shoe comes in successive contact with the ground the button actuator is depressed causing the cricket leaf to flex and a series of sounds to be emitted.

3,878,642
PROPELLER DRIVEN TOY VEHICLE
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Filed May 17, 1973, Ser. No. 361,050
Int. Cl. A63h *29/18*
U.S. Cl. 46—206 **11 Claims**

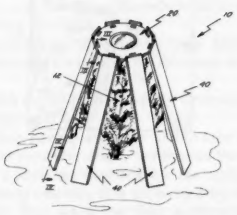


1. A vehicle toy having a rigid body formed of a lightweight hollow shell having front and rear end-portions and a central portion joining said front and rear end-portions, wheels rotatably supported on said body for free wheeling movement of said toy across a surface,

power means including a propeller disposed rearwardly of said rear end-portion of said vehicle body for imparting forward thrust to said toy vehicle, bearing means supported by said upper end-portion of said body for supporting said propeller for rotation about an axis extending longitudinally of said body and inclined downwardly towards said front end-portion of said body,

an elongated rubber band motor secured at one end to said propeller and extending therefrom substantially the length of said vehicle body from said rear end-portion to said front end-portion and means connecting the other end of said rubber band motor to said front end-portion of said body, said body being sufficiently light in weight to permit the thrust generated when said propeller rotates as said rubber band motor unwinds to overcome friction between said wheels and the surface on which said wheels react and the friction between the means rotatably supporting said wheels to permit said vehicle to be propelled across said surface during substantially most of the time said rubber band motor rotates said propeller.

3,878,643
SHRUB PROTECTOR
James R. Greenman, and Phillip J. Pelky, both of Traverse City, Mich., assignors to Pinecrest Engineering, Inc., Traverse City, Mich.
Filed Sept. 22, 1972, Ser. No. 291,285
Int. Cl. A01g *13/02*; **F16m** *11/16*; **A45f** *3/44*
U.S. Cl. 47—28 **13 Claims**



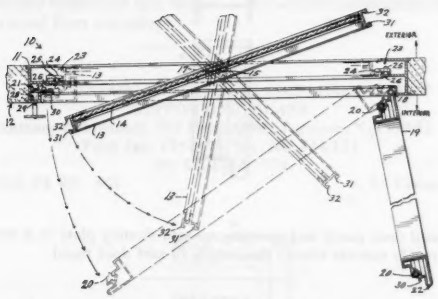
7. A plant guard kit comprising a plurality of bracket means and a central protective member the major portion of which is imperforate for forming a portion of a plant protecting assembly having a plurality of elongated, protective side members spaced around the periphery of said protective member and extending between said protective member and the ground, said protective member and bracket means when assembled with the side members being adapted to form a general enclosure for fitting over and around a plant, the side members being in sufficient number and width to substantially enclose the side areas of a plant but leaving generally vertically extending spaces between said members for air circulation to the plant; said bracket means allowing the elongated side members to be joined to said protective member to form a protective assembly and further allowing said assembly to be staked vertically into the ground in its entirety at one time; each of said bracket means including separate top and toe brackets each adapted to be secured to one elongated side member; said central protective member being a plate member including slots formed in said plate member; each of said top brackets including a first flange for being slidably received in one of said slots for connecting said top bracket to said central protective member and a second flange for securing said top bracket to one end of one of the side members; each of said toe brackets including a first flange for securing said toe bracket to the end opposite the one end of the side member to which said top bracket is attached and a second flange extending generally perpendicularly to said central protective member when said top and toe brackets and the side member are asembled to said central protective member, said second flanges of said toe brackets each including portions converging to a point to facilitate entry into the ground, said second toe bracket flange vertically staking said toe bracket as well as

the entire plant protecting assembly into the ground surrounding a plant to be protected.

3,878,644
WINDOW CONSTRUCTION

Howard R. Brown, 15315 Sand Ridge Rd., Bowling Green, Ohio 43402, and Michael C. Rizza, 2863 Encina Camino, Walnut Creek, Calif.

Filed Oct. 11, 1973, Ser. No. 405,415
Int. Cl. E05c *7/02*
U.S. Cl. 49—67 **2 Claims**



1. A window construction comprising, in combination, a rigid fixed frame defining a window opening, a window sash and pane positioned within said opening on a pivot axis whereby said sash and pane can be pivoted to reverse the position thereof, said fixed frame and sash including releasable locking means at opposite sash edges on either side of the pivot axis for reinforcing said pivotal sash in its closed position, and an open compression frame secured to said fixed frame and adapted to move from an open position remote from said fixed frame and sash to a closed position in engagement with said fixed frame and sash, said compression frame carrying a resilient gasket and said fixed frame and said sash including adjacent engagement surfaces around their peripheries, said resilient gasket engaging both of said surfaces when said compression frame is in the closed position, said engagement surface of said sash being inwardly offset from the adjacent surface on said fixed frame, said resilient gasket engaging said adjacent surfaces at an angle oblique to the plane of the closed window pane, whereby said sash is reinforced against lateral and vertical movement in the closed position and said compression frame is secured in closed position relative to said fixed frame against lateral and vertical movement.

3,878,645
PET DOOR DEVICE

Robert C. Porter, 5001A S. LaRosa Dr., Tempe, Ariz. 85282

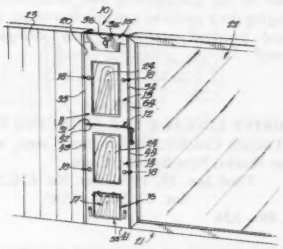
Filed Sept. 12, 1973, Ser. No. 396,381
Int. Cl. E05d *15/48*
U.S. Cl. 49—169 **1 Claim**

1. A pet door device intended for installation in the door frame of a pair of overlapping horizontally sliding doors normally associated in the providing of outside home exits and entries, the device intended to be mounted adjacent a vertically extending side frame section of the door frame in a manner permitting a pet, such as a dog, cat or the like to pass freely therethrough from an indoor locality when so desired, the device comprising:

a substantially flat door structure having a vertical bottom panel and a vertical top panel, the bottom panel including a top end edge, a bottom end edge, and opposed side edges; the top panel being equal in width and thickness and of substantially the same length as the bottom panel and having a top end edge, a bottom end edge, and opposed side edges;

a horizontally extending hinge pivotally interconnecting the top panel bottom edge to the bottom panel top edge providing relative pivotal movement thereof between an inoperative storage and carrying position where the panels are disposed in spaced apart side-by-side parallelism, and an operative position where the panels are disposed in vertical co-planar alignment with the respective side edges defining the side edges of the door structure, the door structure adapted to be vertically disposed adjacent a vertical side frame of the door frame and extend horizontally co-planar with the door frame outwardly from the side frame;

a flat plate member extending the full width of the top panel and disposed in juxtaposition with the interior surface of the top edge portion of the top panel, a vertical slot disposed centrally of the plate and extending therethrough, a fastener threadedly received in the top interior



surface of the top panel and projecting normal thereof adapted to be received in the slot of the plate, the projection guiding the vertical adjusted movement of the plate and serving to lock the plate to the adjusted position to retain the selected vertical height thereof relative to the top panel;

a plurality of locking mechanism associated with the respective side edges of the top and bottom panels to detachably connect the door structure within the door frame without requiring modification or alteration of the door frame, each locking mechanism including a knob rotatably supported on the interior surface of the respective panel adjacent the associated side edge thereof and projecting normal thereto and adapted to rotate in either direction about its axis, each knob having operatively connected thereto a horizontally disposed plunger disposed interiorly of the door structure for horizontal reciprocal movement outwardly and inwardly of the associated door structure side edge, rotation of the locking knob in one direction effecting the horizontal outward movement of the associated plunger in a manner to engage a vertical supporting surface disposed adjacent the door structure, with rotation of the knob in the opposite direction effecting the inward movement of the plunger interiorly of the door structure inwardly of the plane of the door side edge;

a rectangular opening extending transversely through the bottom panel of a size and shape defining a passageway therethrough for a pet;

a pet actuated door panel swingably mounted on the bottom panel adjacent the top edge of the passageway for swinging movement about a horizontal axis in either direction out of the plane of the bottom panel between a normally closed position disposed co-planar with the bottom panel in a manner closing the passageway and an open position disposed out of the plane of the bottom panel in a manner to open the passageway, the pet actuated door panel being swingably mounted on the bottom panel by a horizontally extending hinge connected to the top edge of the passageway and extending downwardly therefrom to have the opposite end connected to the door panel, the hinge being resiliently biased by a coiled spring to retain the

door panel in the normally closed position and to effect the return of the door panel to the closed position after each time it is swung out of the same to permit a pet to pass therethrough, the door swinging panel being adapted to be solely operated by the pet passing in either direction therethrough without requiring any assistance from others; and

a locking device associated with the swinging door panel and adapted to lock the door panel in the normally closed position, the locking device comprising a pair of transversely spaced apart rectangularly shaped flat locking members, one locking member disposed on each side of the passageway and having one end pivotally connected to the interior surface of the bottom panel providing rotative movement of the locking member about the pivot in a horizontal plane parallel to the bottom panel, the free end of each locking member adapted to be swung into the plane of the passageway and detachably engage the swinging door panel in a manner to retain the same in the closed position preventing any swinging movement thereof.

3,878,646

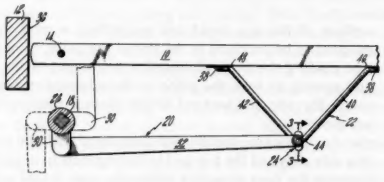
DRIVE LINKAGE FOR SWINGING DOORS

Samuel Lincoln Crocker, Farmington, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 25, 1974, Ser. No. 436,503

Int. Cl. E05f 11/00

U.S. Cl. 49—326 **5 Claims**



1. A drive linkage for connecting a bi-swing door to a pivotable drive spindle offset from the pivot axis of the door on one side thereof comprising an armature connected at one end to the drive spindle for pivotal movement therewith, a fixed guide track member secured to said door and having a guide track extending outwardly from said one side thereof, said track having a pair of legs joined at an apex offset from said spindle and said door, said armature having a track follower on the end thereof opposite said one end, said track follower constantly engaging said guide track for movement along the legs thereof toward and away from the apex during full bi-swing movement of said door, said track follower being positioned at the apex of the guide track when the door is in a closed position.

3,878,647

DOOR PANEL STRUCTURE

August Burgers, Erkelenz-Gerderath, Germany, assignor to Europatent S.A., Luxemburg, Luxemburg

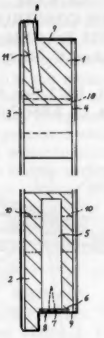
Filed Oct. 1, 1973, Ser. No. 402,582

Claims priority, application Germany, Sept. 30, 1972, 2248152

Int. Cl. E05d 7/02

U.S. Cl. 49—382 **6 Claims**

3. A door panel, in which both vertical side edges of said door panel comprise a horizontally extending lock pocket adapted to receive a door lock and also comprise a recess provided at the outer end of said lock pocket and wider than the latter and adapted to receive an outer mounting plate of a door lock, a dummy plate corresponding in its dimensions substantially to the dimensions of said recess and covering the adjacent entrance to said lock pocket, and coating means forming the finished surface layer of said both side edges of



said door panel and covering up said dummy plate in a not visible manner toward the outside of said door panel.

3,878,648

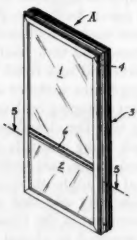
FRAME CONCEALED OPERATING SASH

Neil F. Maune, Ladue, Mo., assignor to Profile Systems, Inc., St. Louis, Mo.

Filed Apr. 4, 1973, Ser. No. 347,834

Int. Cl. E05d 7/00

U.S. Cl. 49—400 **7 Claims**



1. In a window structure for a building and of the type wherein its window frame presents a narrow profile, and its operating and fixed sashes present a zero line of sight through their concealment behind the narrow frame profile as when the operating sash is in the closed position, said window structure incorporating a glazed operating sash and a glazed fixed sash, a perimeter frame peripherally surrounding said sashes and capable of being permanently mounted to the building structure, an intermediate frame member of tubular like structure provided between said sashes and being fixed to saidi perimeter frame thereby forming the operating and fixed sash openings, said perimeter frame having jamb, sill and head portions, said portions being of uniform semi-tubular structure and when viewed exteriorly along with the intermediate frame member being of uniform dimensions, said portions and the intermediate frame member having integral face flanges extending perpendicularly inwardly thereof in the direction of said sashes, said face flanges having a width substantially less than the width of said portions and the intermediate frame member, said face flanges on said portions and the intermediate frame member cooperating to form a continuous seat for the respective operating and fixed sashes, the glazed operating sash being hingedly mounted to one of said frames proximate a sash opening and capable of being opened with respect

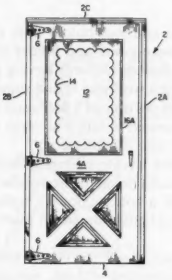
thereto, said operating sash being formed as a tubular like frame around its perimeter and having an integral reglet provided forwardly thereof for securing the glaze firmly in place, said glazed fixed sash including a retainer being formed of channel like structure around its perimeter and cooperating with gasket means for securing said glaze against the interior of the continuous face flanges of the fixed sash opening for holding said glaze firmly in place, locking means provided integrally rearwardly of the channel like structure for securing the fixed sash to its perimeter frame and intermediate frame member, and said operating sash when maintained in closed position in addition to said fixed sash being substantially concealed behind the face flanges as the window construction is viewed from one side.

3,878,649

DOOR ASSEMBLY INCLUDING SIMPLIFIED INSERT SUPPORTING MEANS

Anthony R. Mennuto, 769 Pascack Rd., Paramus, N.J. 07652

Filed Jan. 17, 1974, Ser. No. 434,121
Int. Cl. E06b *3/26*
U.S. Cl. 49—501 **15 Claims**



1. In a door of the type including front and rear panels having corresponding portions surrounding a substantially rectangular opening and a space between said panel portions, the improvement comprising:

an insert supported on the rear panel behind the opening and behind the space between the corresponding panel portions includes top, bottom and a pair of side members, each of said members having a section including a pair of parallel, longitudinally extending legs in spaced relation to each other and separated by a member normal to the legs and near corresponding ends thereof, one of the legs adjacent the rear panel, each of the legs carrying means which divides said legs into first and second portions, the first portions of the legs and the dividing means cooperating to form a first channel, and the second portions of the legs and the dividing means and separating member cooperating to form a second channel; and

a gasket arranged in the space, the gasket following the perimeter of the corresponding panel portions and being adjacent the insert.

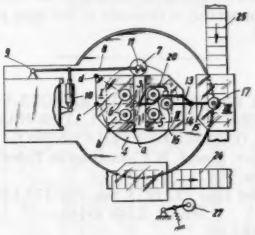
3,878,650

GLASS GRINDING MACHINE

Kurt Klotzbach, A-9210 Poertschach am Woerthersee, Sekull, Austria

Filed Oct. 2, 1974, Ser. No. 511,320
Claims priority, application Germany, Oct. 4, 1973, 2349871
Int. Cl. B24b *17/02, 47/02, 7/00*
U.S. Cl. 51—101 R **14 Claims**

1. A glass grinding machine for dressing the edges of glass windowpanes, comprising a motor-driven turntable having releasable clamping means automatially coordinated with the movement of the turntable for holding said windowpanes during grinding thereof; a working station provided at the periphery of the turntable and having a rotating grinding wheel movably mounted and controlled by a templet guiding means corresponding to a predetermined contour; a feed station provided at the turntable periphery and having feed means automatically coordinated with the turntable movement for depositing the windowpanes continuously fed for the grinding operation into one of said clamping means; a removal station provided at the turntable periphery and having removal means operating automatically in coordination with the turntable movement for the removal of the ground windowpanes from one of the clamping means, the feed and removal means having a swinging arm driven in coordination with the



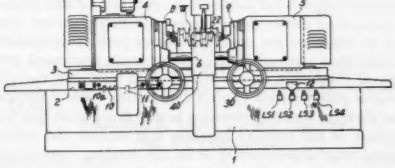
turntable and provided with means for holding one windowpane each; a swinging arm mounted for rotation about the axis of rotation of the turntable and having on its free end extending beyond the radius of the turntable a rotatably mounted beam having both of its ends positioned at a feed station and at a removal station, respectively, when the beam is oriented radially with regard to the turntable, said beam being equipped with glass pane holding means; a driver connected with the turntable shaft to produce a temporary synchronization of said swinging arm and turntable; a drive for rotating the beam by 180° about its axis of rotation on the swinging arm; and a rotatory drive for rotating the swinging arm independently of the synchronization of the turntable and swinging arm at a velocity exceeding the speed of rotation of the turntable.

3,878,651

MACHINE TOOL WITH REST APPARATUS

Shuichi Nakada, Anjo; Hiroshi Ota, Kariya, and Tetsuo Matsuzaki, Nishio, all of Japan, assignors to Toyoda-Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Apr. 9, 1974, Ser. No. 459,315
Claims priority, application Japan, Apr. 11, 1973, 48-40986
Int. Cl. B24b *5/42*
U.S. Cl. 51—105 SP **9 Claims**



1. A machine tool with rest apparatus comprising,

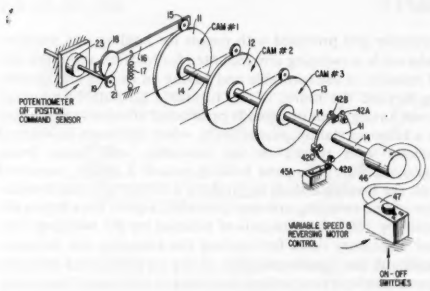
a base,

a table slidably mounted on said base,
workpiece supporting means mounted on said table for supporting a workpiece having at least first and second axially spaced portions to be machined,
tool supporting means slidably mounted on said base for supporting a tool,
first drive means for creating a relative movement between said tool supporting means and workpiece supporting means in order to perform a machining operation on the workpiece,
rest apparatus mounted on said base for supporting the workpiece,
second drive means for feeding said rest apparatus toward the workpiece in opposition to a force rendered to the workpiece by said tool, and
control means for changing the rate of the feeding cycle of said rest apparatus in response to the axial portion to be machined.

3,878,652
LOW COST PROGRAMMABLE REMOTE CONTROL MACHINE TOOL MANIPULATOR HAVING CONTINUOUS PATH CONTROL

Ralph S. Mosher, Elnora, N.Y., assignor to Robotics, Incorporated, Elnora, N.Y.

Filed June 25, 1973, Ser. No. 373,125
Int. Cl. B24b *49/10*
U.S. Cl. 51—165.89 **36 Claims**

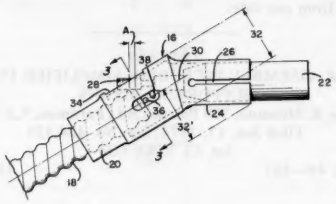


1. In a programmable automatically operable remote control machine tool manipulator having continuous path control including working head means, electrically controlled power drive means for relatively physically moving the working head means into desired relative work positions, with respect to a work piece, position feedback servo means for sensing the actual relative positioning of working head means and deriving feedback electricl signals representative thereof, programmable automatic input command position signal producing means for automatically supplying an electrical input command position signal representative of the desired relative positioning of the working head means, and circuit means for combining the input command position signal with the actual relative position feedback signal and deriving electrical output error control signals for controlling operation of said electrically controlled power drive means, the improvement comprising an improved low cost, continuous path programmable cam controlled automatically operable input command position signal producing means including at least one movable continuous path position control cam having control surfaces formed thereon which comprise a scaled down analogue representation of the transfer function that defines the desired command relative positioning of the the working head means, the control surfaces of said position control cam having a different physical configuration from the command relative positioning path which they represent, cam follower means coupled to the position control cam for reading out the command relative positioning representations, and transducer means coupled to and controlled by the cam follower means for converting the movement of the cam follower means into electrical command position signals representative of the desired relative positioning of the working head means.

3,878,653
WORKPIECE AND TOOL HOLDER UNIT

Andrew J. Kozlay, Phillipsburg, N.J., assignor to Ingersoll-Rand Co., Woodcliff, N.J.

Filed Jan. 4, 1974, Ser. No. 430,767
Int. Cl. B24b *24/06, 9/00*
U.S. Cl. 51—216 A **16 Claims**

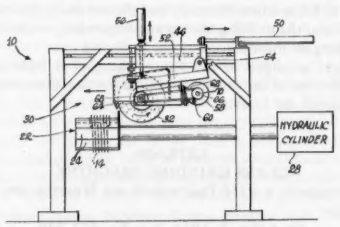


9. A workpiece and tool holder unit, comprising:
a single, one-piece guide and holder element;
said guide and holder element having guide means for slidably receiving a workpiece, and support means for engaging a selected portion of a tool, and for holding the latter against movement relative to said unit and in working engagement with a workpiece;
said guide means having a longitudinal axis; and
said support means being formed on an angle relative to said axis, to hold a tool obliquely, relative to said axis, in traverse of said guide means at said angle; further including
limit stop means, fixed to one of said guide and support means for delimiting slidable movement of a workpiece received by said guide means to a given distance along said axis; and wherein
said limit stop means comprises an abutment carried by said guide means and disposed for impingement with a foremost end surface of a guide means-oriented workpiece.

3,878,654
MACHINE FOR SEVERING RINGS FROM A COIL

William H. Wendt, III, River Forest, and George D. Krieps, Glenwood, both of Ill., assignors to Chicago Metal Mfg. Co., Chicago, Ill.

Filed Mar. 14, 1973, Ser. No. 341,304
Int. Cl. B24b *19/00, 19/11*
U.S. Cl. 51—34 D **3 Claims**



1. A machine for severing rings from a helical coil having a plurality of turns of resilient bar stock,
comprising a generally cylindrical internal expanding device for receiving said coil and expanding said coil against the resilience thereof by a predetermined circumferential increment to an increased internal circumference,

selectively operable power means for expanding and releasing said expanding device,

and a power operable severing device for forming a cut across and through the turns of said coil on said expanding device to sever each turn of said coil as a separate ring having a gap therein corresponding in width to the thickness of said severing device,

said severing device having a thickness corresponding to said predetermined increment whereby the width of said gap corresponds to said predetermined increment,

said expanding device being releasable to allow resilient return movement of each ring to its original circumference to close said gap.

3,878,655

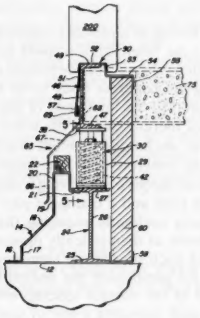
VIBRATION ABSORPTION SYSTEM

William S. Toth, 302, 17th St., Wilmette, Ill. 60091, and James H. Anderson, 1603 Thornwood, Wheaton, Ill. 60187

Filed May 6, 1974, Ser. No. 467,214

Int. Cl. E04b *1/36;* **E04d** *13/14;* **F25d** *19/00*

U.S. Cl. 52—27 **23 Claims**



1. A pre-assembled vibration absorption system for rooftop mounted heating and air conditioning units, comprising in combination,

a continuous base plate for seatment upon an underlying surface such as a rooftop,

a continuous roofing curb mounted on said base plate and extending upwardly therefrom,

the upper edge of said roofing curb provided with roofing securement means for securing the roofing material thereto in overlaying relation,

at least a pair of spacer and support means mounted on said base late adjacent said roofing curb and linearly spaced along said base plate,

at least a pair of levelling and tensioning means, one of each of said levelling and tensioning means mounted on a corresponding spacer and support means thereby to be in spaced and supported relation with respect to said base plate and roof pitch,

each of said levelling and tensioning means provided with independent tension adjustment means to separately and independently adjust the levelling and tensioning function thereof,

said levelling and tensioning means carrying a continuous support beam thereon and thereacross to support a heating and air conditioning unit thereatop,

a continuous top cover shield overlying said continuous support beam,

and a removably engageable continuous conterflash panel, each of said cover shield and counterflash panel provided with, respectively, mating engagement means to accommodate the removable engagement of said counterflash with said top cover shield,

whereby said vibration absorption system may be preassembled and placed into position on location, thereby permitting the independent varying of said levelling and tensioning means dependent upon the particular load characteristics of a heating and air conditioning unit supported thereon, by the independent and separate adjustment of said adjustment means associated with said levelling and tensioning means, while at the same time permitting the unit to be roofed in with any appropriate roofing material.

3,878,656

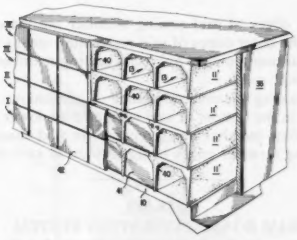
MODULAR MAUSOLEUM CRYPT SYSTEM

Edward C. Duwe, 3840 Highland Shores, and William E. Duwe, 1203 Washington Ave., both of Oshkosh, Wis. 54901

Filed Apr. 9, 1974, Ser. No. 459,299

Int. Cl. E04h *13/00*

U.S. Cl. 52—134 **9 Claims**



1. A modular mausoleum crypt system comprising one or more tiers of crypts, each tier including at least two precast monolithic modular structures:

A. a first modules including

1. an upper, horizontally disposed slab;

2. a pair of spaced side walls having respective longitudinal axes and depending from said upper slab, the spacing between said side walls being of a predetermined width to receive a casket therein;

3. said upper slab extending laterally from about the longitudinal axis of one of said side walls to beyond the longitudinal axis of another of said side walls for a predetermined distance in cantilevered fashion and terminating at a free edge;

4. a rear wall extending substantially from about the longitudinal axis of said one of said side walls to beyind said free cantilevered edge of said upper slab, the rear wall portion extending beyond said free cantilevered edge forming a rear wall projecting portion; and

5. said cantilevered and projecting portions of said upper slab and rear wall adapted to be received in ledges formed in a next adajcent precast modular unit to form respective lap joints;

B. a next adjacent module including ledges for receiving said cantilevered and projecting portions of the upper slab and rear wall of said first named module.

3,878,657

SEALING DEVICE AND BURIAL VAULT

George W. Ferver, 2320 Rennce Ave., Ext. R.D., Warren, Pa. 16365

Filed July 8, 1971, Ser. No. 160,722

Int. Cl. E04h *13/00*

U.S. Cl. 52—139 **5 Claims**

1. A burial vault and a seal combination comprising,

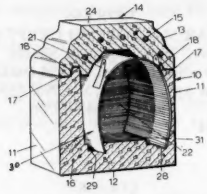
an open topped vault base part with a channel formed in the bottom of said vault adapted to receive a coffin,

a cover for said vault base part,

an open bottomed airtight sealing member sleeved down into said vault base part,

said sealing member being adapted to fit over said coffin whereby air is trapped inside said sealing member and around said coffin and said sealing member prevents water from entering into said space around said coffin and from coming in contact with said coffin,

restraining means to prevent the bottom of said sealing member from collapsing inwardly,



the lower edges of said sealing member are disposed between the outer edges of said restraining means whereby said restraining means hold said sealing member against collapsing,

said restraining means comprising a continuous channel formed in the bottom of said vault and the lower edges of said sealing member being received in said channel,

said sealing member edges being secured in said channel.

3,878,658

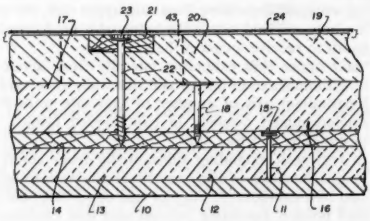
FOAM BOARD INSULATION SYSTEM

Robert Newton Davis, Bolingbrook; Royce Jay Laverman, South Holland, and Ivan Vallier LaFave, Naperville, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Aug. 29, 1973, Ser. No. 392,637

Int. Cl. E04b *2/02, 5/57*

U.S. Cl. 52—410 **10 Claims**



1. An insulated surface comprising:

a rigid surface having a plurality of studs projecting perpendicularly therefrom in spaced-apart rows;

a first layer of abutting insulation boards placed against the surface, said insulation boards being spaced so that the studs are in abutting joints of the insulation boards;

wooden strakes positioned over the joints of abutting insulation boards of the first layer, said wooden strakes being secured to the studs;

a second layer of abutting insulation boards having abutting joints substantially parallel to, but offset from, the joints in the first layer of insulation and held in face-to-face contact with the first layer by fastener means secured to the wooded strakes; and

a third layer of abutting insulation boards having abutting joints substantially parallel to, and in line with, the joints in the first layer and held in face-to-face contact with the second layer by fastener means secured to the wooden strakes in the first layer.

3,878,659

FITTING FOR PRE-CAST CONCRETE BODIES

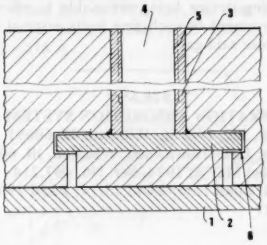
Hermann Pfeifer, Mammostrasse 1, 894 Memmingen, Germany

Filed July 9, 1973, Ser. No. 377,281

Claims priority, application Germany, July 8, 1972, 7225533; Aug. 4, 1972, 7228907

Int. Cl. E04b *1/41*

U.S. Cl. 52—699 **3 Claims**



1. In a fitting for use in a pre-cast concrete body for permitting the body to be lifted from a mold and transported, an internally-threaded sleeve for detachably securing means thereto allowing the concrete body to be lifted and an elongated plate secured to the lower end of the sleeve at substantially right angles thereto closing the lower end of the sleeve and providing an anchorage element distributing the lifting effort through the concrete body, the improvement including at least two spacer pieces each having a supporting stem with upper and lower ends and a clamping part at the upper end, the clamping parts resiliently engaging the perimeter of the anchorage elements at diametrically opposite locations, with the lower end of each supporting stem engaging the bottom wall of a mold for positioning the anchorage element above the bottom wall at the correct spacing from such wall, said clamping parts each including a pair of spaced arms of different lengths, the upper end of the supporting stem being connected to the arm of shorter length and the arm of longer length being inclined toward the arm of shorter length.

3,878,660

SECTION FRAME WITH THERMAL INSULATION BETWEEN THE INNER AND OUTER FRAME SECTION

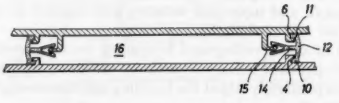
Gernot Jacob, Deggendorf, Germany, assignor to Gotz Metallbau GmbH, Grosswalding, Germany

Filed Apr. 9, 1973, Ser. No. 349,385

Claims priority, application Germany, Apr. 13, 1972, 2217877; July 28, 1972, 2237245

Int. Cl. E06b *1/18*

U.S. Cl. 52—403 **11 Claims**



1. An insulating frame comprising:

inner frame means, said inner frame means being provided with a planar side wall portion and at least a first projection extending outwardly therefrom, said first projection having a part extending generally parallel to and spaced from said inner frame means planar side wall portion and cooperating with said side wall portion to define a first open groove between said projection and said inner frame means side wall portion;

outer frame means, said outer frame means being provided with a planar side wall portion and at least a first projection extending inwardly therefrom toward said inner frame means, said outer frame means first projection having a part extending generally parallel to and spaced from said inner frame means planar side wall portion and cooperating with said outer frame means side wall portion to define a second open groove between said projection and said outer frame means side wall portion, said first and second grooves facing in the same direction, the said first projections of said inner and outer frame means being generally aligned with and spaced apart from one another;

insulating means structurally interconnecting said inner and outer frame means, said insulating means including a bridging portion having end flanges extending generally transversely from the opposite ends thereof in a direction opposite to the facing direction of said grooves and engaging said first and second grooves, said insulating means further including an anchoring portion integral with said bridging portion, said anchoring portion extending from said bridging portion intermediate said inner and outer frame means and in a direction generally parallel to said planar side walls of said inner and outer frame means, said anchoring portion being provided with at least a first shoulder adjacent the end thereof disposed away from said bridging portion; and

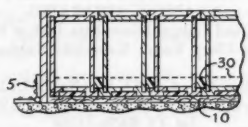
projection means integral with and extending from one of said inner and outer frame means, said projection means having a free end, said projection means engaging said first shoulder of said insulating means anchoring portion and loading said bridging portion in a direction to urge said end flanges into said grooves whereby said insulating means flanges are retained in engagement with said frame means grooves.

3,878,661

LIGHT-WEIGHT, CONSTRUCTION UNIT

Alvin Edward Moore, Manini Way, Rt. 1, Bay St. Louis, Miss. 39520

Continuation of Ser. No. 102,317, Dec. 29, 1970, abandoned. This application May 14, 1973, Ser. No. 359,800
Int. Cl. E04c *1/06*
U.S. Cl. 52—443 **2 Claims**



1. As a lightweight article of commerce, an easily transportable wall element adapted for assembly with other, similar elements in a building structure and for receiving surfacing material after said assembly, the said wall element consisting of:

a single, planar, stiff, wooden base, forming a flat side of the wall element;

a plurality of used, metallic cans of beverage-containing type arranged on said base with their axes paralleling one another and normal to the plane of said base, each of said cans consisting of a cylindrical tube and a pair of tube-closing, individual end plates that are fixed to opposite ends of said tube;

means defining a used-can opening in part of only one of said end plates of each can, the other end plate of each of said cans being closed;

a coating of adhesive substance, holding and bonding the partially opened ends of said used cans on and adjacent to said base;

a layer of porous plastic in contact with and distinctive from said coating, in contact with major portions of said tubes of the cans, located in spacex between adjacent pairs of said cans and extending from said coating outward a distance toward said other closed can-end plates, the said distance being less than the axial length of the cans;

the said closed can-end plates and adjacent portions of said tubes having vacant spaces between them, ambient air being in said vacant spaces;

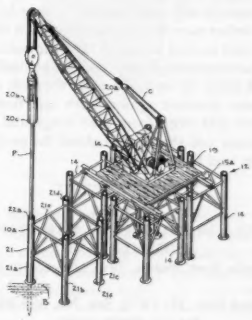
the said vacant spaces being adapted to hold and contain stucco when the said article is adjacent to other, similar articles in a building structure.

3,878,662

METHOD OF CONSTRUCTING A REMOTELY LOCATED DRILLING STRUCTURE

Louis C. Cernosek, 214 Winkler Dr., Houston, Tex. 77017

Filed July 9, 1973, Ser. No. 377,242
Int. Cl. E04g *21/00*
U.S. Cl. 52—745 **8 Claims**



1. A method of constructing a drilling platform in remote areas, comprising the steps of:

assembling a temporary crane platform in the remote area said step of assembling said temporary crane platform including:

transporting by air a plurality of temporary foundation units;

setting said temporary foundation units in proximity to each other; and

interconnecting said temporary foundation units with a temporary crane platform for supporting a crane only during an early phase of constructing said drilling platform;

assembling a crane on said temporary crane platform;

building a plurality of permanent foundation units, said step of building said plurality of permanent foundation units including:

utilizing said crane to build a first set of permanent foundation units surrounding said temporary crane platform;

moving said crane to one of said permanent foundation units in said first set;

replacing said temporary crane platform with a permanent foundation unit; and

utilizing said crane to building other of said permanent foundation units;

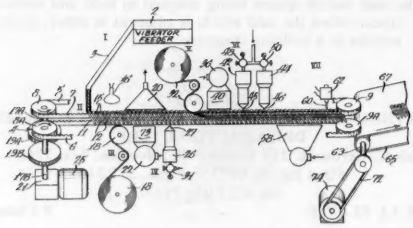
utilizing said crane to assemble a derrick substructure on said permanent foundation units; and

assembling a derrick substructure for drilling oil or the like in the remove area.

3,878,663
METHOD AND APPARATUS FOR ASSEMBLING STRIPS OF FASTENERS

Lawrence S. Shelton, Morton Grove, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Apr. 25, 1973, Ser. No. 354,258
Int. Cl. B65b 19/34
U.S. Cl. 53—3 18 Claims

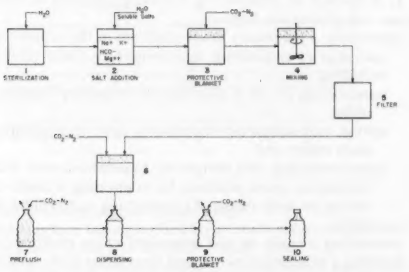


11. A method of joining together fasteners having elongated shanks to obtain a fastener strip, comprising: positioning a plurality of fasteners with said shanks in a side-by-side parallel array so as to define narrow gaps between each of said shanks; applying first and second strips of thermoplastic tape having adhesive properties transversely and tangentially across the shanks of said array on opposite sides thereof; and directing heated air under pressure against both said first and second strips to deform said strips from their tangential position into said gaps between said shanks and about the periphery of said shanks to form said fastener strip.

3,878,664
PROCESS FOR PRODUCING A THERAPEUTIC COMPOSITION

Charles D. Zinke, Fort Worth, Tex., assignor to Cybersol Inc., Dallas, Tex.

Filed Nov. 27, 1972, Ser. No. 308,021
Int. Cl. B65b 31/02
U.S. Cl. 53—22 R 14 Claims



1. A method of making an injectable aqueous solution comprising:

a. dissolving in a sterile water volume from about 75 to about 150 millimoles per liter of sodium cation, about 5 to about 50 millimoles per liter of potassium cation, about 5 to about 50 millimoles per liter of bicarbonate ion, and about 75 to about 150 millimoles per liter of chloride ion to form a solution having an osmolality in the range from about 170 to about 460 and a pH in the range of from about 6–8.5;

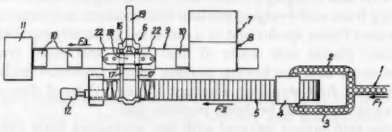
b. blanketing the resulting solution with a mixture of carbon dioxide and another inert gas, the carbon dioxide being present in said gaseous mixture in an amount to provide a partial pressure on said liquid which is substantially equal to the partial pressure of carbon dioxide which is produced from equilibrium with the bicarbonate ions in said solution to thereby stabilize said solution; and

c. dispensing said solution into at least one sterile container, and while said dispensed solution is still blanketed by said gas mixture, hermetically sealing said container containing said solution and said gas mixture blanketed thereover.

3,878,665
BOTTLE PACKING INSTALLATION

Jean Couten, Paris, France, assignor to Chandon Handelsgesellschaft

Filed Mar. 6, 1974, Ser. No. 448,569
Claims priority, application Germany, Mar. 12, 1973, 2312167; France, Oct. 9, 1973, 73.35956
Int. Cl. B65b 21/06, 35/56
U.S. Cl. 53—143 11 Claims

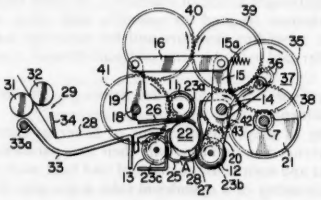


1. An installation for packing bottles lying side-by-side and top to bottom in cases, comprising a case conveyor operable to move open-topped cases in succession in predetermined spaced relation, transporter means operable to move bottles lying on their sides in side-by-side top to bottom relationship with the bodies of alternate bottles nested between the necks of adjoining bottles, a machine operable to overturn upright bottles and dispose them in said side-by-side relationship on the transporter means, an upright bottle conveyor operable to deliver upright bottles in two paths to opposite sides of the bottle overturning machine, and a case filling head operable to remove from the transporting device a predetermined number of successive recumbent bottles and to deposit the bottles as a layer in a case on the case conveyor.

3,878,666
PREVENTION OF WRAPPER SLACK IN COIN WRAPPING APPARATUS

Masaru Itoda, and Tadayosi Kawabata, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed Apr. 4, 1973, Ser. No. 347,728
Claims priority, application Japan, Apr. 13, 1972, 47-43543
Int. Cl. B65b 11/04
U.S. Cl. 53—212 4 Claims



1. In a coin-wrapping apparatus including in combination, means for orienting assembled, similar coins at a wrapping station; a supply of strip material for forming wrapper segments for convolution about the oriented coins; means engagable with the strip material for conveying it lengthwise toward a wrapping station in a path of travel extending along the

strip length; guide means disposed along the path of travel of said strip material for engaging the leading end of the strip material and directing it toward the wrapping station at which the coins are oriented; cutter means disposed intermediately of the path of travel of said strip material for forming coin-wrapping segments; and a wrapping mechanism for engaging the leading end of a coin-wrapping segment and wrapping it about the oriented coins at the wrapping station; the improvement in which said wrapping mechanism comprises a series of elongated rollers exposed along their entire length and journaled for rotation in flanking relation to the wrapping station and engagable along the entire length of the oriented coins with the leading end of the wrapper segment between the roller and the oriented coins, means mounting at least one of said rollers in a fixed position relative to the wrapping station, and means mounting the remaining rollers for simultaneous displacement laterally with respect to said wrapping station, lever means operatively connected to said displacable rollers and integrating their simultaneous movement for positioning these rollers relative to the wrapping station and said fixed roller; power means for rotating the rollers at the wrapping station; control means for orienting the displacable rollers relative to the wrapping station and oriented coins; guide means at the periphery of each of the respective rollers extending partially around and disposed in series about the wrapping station for progressively engaging the leading end of a wrapper segment and directing it to the series of rollers and oriented coinse for convoluting the wrapper segment about the coins at the wrapping station, the guide means for said displacable rollers being connected to and movable with the lever means integrating simultaneous movement of said displacable rollers, said power means including force transmitting portions for rotating one displacable roller located at a position with said guide means adapted to guide the leading tip end portion of the wrapping segment at a peripheral speed slightly lower than that of the succeeding roller for maintaining a wrapper segment in substantial tension and eliminating intermediate wrinkles in the wrapper segment as the leading tip end portion thereof successively engages the series of guide means.

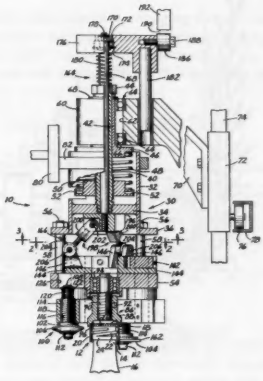
3,878,667

CLOSURE CAP APPLYING APPARATUS

John H. Holstein, 5304 N. Colonial No. 102, Fresno, Calif. 93704

Filed Apr. 3, 1973, Ser. No. 347,575
Int. Cl. B67b *3/18*; **B65b** *7/28*
U.S. Cl. 53—340 **13 Claims**

1. Closure applying apparatus of the roll-on type for applying a closure to the neck portion of a container having conformations thereon adjacent the neck portion, the closure having an upper end and a generally annular skirt portion adapted to be received over the neck portion of the container adjacent the conformations thereon, said apparatus comprising, in combination, housing means defining a longitudinal axis for said apparatus and being adapted for rotation about said longitudinal axis, pressure head means supported by said housing means for engagement with the upper end of a closure when disposed on the neck portion of a container, actuating rod means supported by said housing means for longitudinal movement between normal first and second positions relative to said housing means, at least one rotatable forming roller, support means supporting said forming roller for movement between a first position spaced outwardly from the skirt portion of a closure when said closure is engaged by said pressure head means and a second position wherein the peripheral edge of the roller engages the skirt portion of the closure for forming the skirt portion against at least a portion of the conformations on the neck portion of the associated container during rotation of said housing means, and toggle linkage means interconnecting said actuating rod means and said support means such that said forming roller is moved inwardly from its said first position to a predetermined second position upon movement of said actuating rod from its said first position to a predetermined second position as established by the normal height of a container being capped, said toggle linkage means being adapted to accommodate longitudinal over-travel of said actuating rod beyond its said predetermined second position without effecting an appreciable further movement of said forming roller inwardly toward said closure beyond said predetermined second position of said forming roller whereby to prevent damage to said closure and said container upon over-travel of said actuating rod.

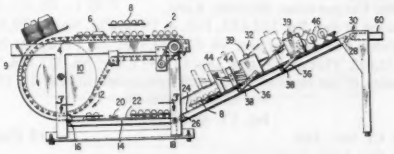


3,878,668

CARTON CLOSING EQUIPMENT

Otto C. Niederer, deceased, late of Bear Tavern Rd., Titusville, N.J. 08560; by Thomas C. Niederer, and by Dennis A. Niederer, executors, both of Titusville, N.J.

Filed Apr. 12, 1972, Ser. No. 243,264
Int. Cl. B65b *7/26*
U.S. Cl. 53—376 **4 Claims**



1. Equipment for use with both filled egg cartons and filled egg flats comprising carton closing means and a conveyor for moving the filled cartons and flats past said carton closing means, said carton closing means being movable into a position adjacent said conveyor wherein it will engage and close cartons supported on the conveyor and being movable with respect to the conveyor to a position permitting egg flats supported on the conveyor to move past said carton closing means without engaging the same, said carton closing means being yieldably movable with respect to the conveyor when engaging cartons to permit the closing of cartons of different size.

3,878,669

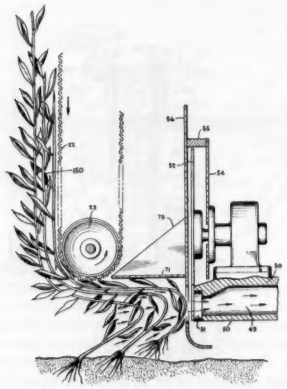
MECHANICAL ELIMINATION OF AQUATIC GROWTHS

Merle P. Chaplin, 609 Driver Ave., Winter Park, Fla. 32789

Division of Ser. No. 364,283, May 29, 1973. This application Oct. 2, 1973, Ser. No. 402,822

Int. Cl. A01d *45/08*

U.S. Cl. 56—9 6 Claims



1. The method of eliminating upstanding and floating aquatic growths from a body of water comprising the steps of moving upstanding and floating growths generally downward to a zone adjacent to their root structure while allowing water in which the growths float to pass substantially free of downward movement by contacting upstanding and floating growths with a downwardly moving open mesh belt, cutting the growths into short pieces in said zone by bringing the growths in said zone into contact with a moving cutter in a housing in the zone to advance still upstanding growths and those brought into said zone by the moving step using the downwardly moving mesh belt into an entry in the housing, and thence removing hydraulically the growths which have been cut into small pieces and their roots from said zone via conduit means.

3,878,670

STACK FORMING LOADER

Raymond A. Adee, Newton; Dean P. Brooks, Hesston, and John Dale Anderson, Canton, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 223,685, Feb. 4, 1972, Pat. No. 3,779,158, which is a division of Ser. No. 82,900, Oct. 22, 1970, Pat. No. 3,732,672. This application Jan. 12, 1973, Ser. No. 323,114. The portion of the term of this patent subsequent to May 15, 1990, has been disclaimed.

Int. Cl. A01d *87/04*

U.S. Cl. 56—346 15 Claims

1. In a farm implement:

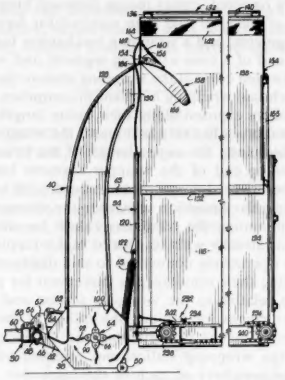
a combination crop pickup and conveying unit having an open bottom housing, an upright delivery tube extending upwardly from the housing, and a pickup rotor mounted within said housing for lifting a crop from the ground through said open bottom and projecting the same into said tube;

a container separate from the tube and shiftable relative thereto for receiving the crop from the tube; and

a deflector shiftably secured to the container therewithin for distributing the crop within the container as the crop is fed thereinto,

said container being sectional, including a first, hollow, open top section and a second vertically reciprocable, hollow, open bottom section,

said sections receiving the crop when the second section is raised,



said deflector being shiftably attached to the second section therewithin for movement to adjusted positions in response to reciprocation of the second section.

3,878,671

SYSTEM FOR MEASURING THE TWIST OF SPUN YARN IN OPEN-END SPINNING

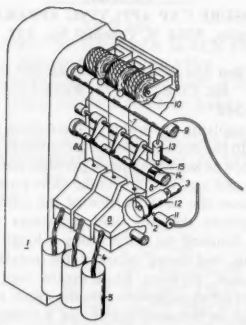
Pavel Seidl, and Milos Mladek, both of Usti nad Orlici, Czechoslovakia, assignors to Elitex Zavody textilniho strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia

Filed Sept. 17, 1973, Ser. No. 397,741

Claims priority, application Czechoslovakia, Sept. 15, 1972, 6323-72

Int. Cl. D01h *13/32, 1/12*

U.S. Cl. 57—34 R 4 Claims



1. A system for measuring and indicating the twist factor of spun yarn formed in an open end spinning unit having feed means for delivering fibrous material, a rotary twisting means for spinning the fibers into a yarn, and a rotary withdrawing means for taking up the yarn comprising, first detector means located at said twist means for sensing the revolution of said twist means and providing an output having a value proportional to the number of revolutions thereof a second detecting means located at said withdrawing means for sensing the revolution of the withdrawing means and providing an output having a value proportional to the number of revolutions thereof, said first detecting means being connected to the input of a first counter, a gate means interposed between said

first detector and said first counter, said second detecting means being connected to the input of a second counter, the output of which is connected to the input of said gate, and which provides a signal for controlling said gate, and an indicator connected to said first counter to record the value received by said counter.

3,878,672

SYSTEM FOR MOUNTING A FALSE TWIST UNIT

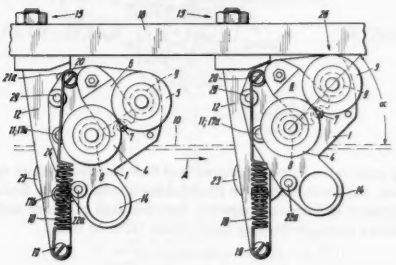
Gisert Kohler, Oeffingen, Germany, assignor to SKF Kugellagerfabriken Gesellschaft, Schweinfurt, Germany

Filed Oct. 3, 1973, Ser. No. 403,327

Claims priority, application Germany, Oct. 7, 1972, 2249263

Int. Cl. D01h *7/92*

U.S. Cl. 57—77.45 **15 Claims**



1. A false twist unit comprising a fixed bracket, a supporting plate carrying a twist tube, means for holding said tube and means for rotating said tube including a pair of drive whorls extending from said plate, means pivotally mounting said plate on said bracket, a tangential belt continuously moving in one direction and spring means urging said plate about its pivot to cause said whorls to engage said belt and thereby rotate said tube, said means for pivotally mounting said plate on said bracket comprising a pair of spaced bearing means, said plate being mounted selectively in one or the other of said bearing means whereby in one of said bearing means said plate is fulcrumed to cause one of said whorls to engage one side of said belt and in the other of said bearing means said plate is fulcrumed to cause the other of said whorls to engage the other side of said belt thereby reversing direction of rotation of said tube.

3,878,673

AUTOMATIC WATCH

Heinz Meitinger, Mutlangen, Germany, assignor to Bifora-Uhren J. Bidlingmaier GmbH, Schwabisch Gmund, Germany

Filed Jan. 15, 1974, Ser. No. 433,527

Claims priority, application Germany, Jan. 20, 1973, 2302885

Int. Cl. G04b *5/24*

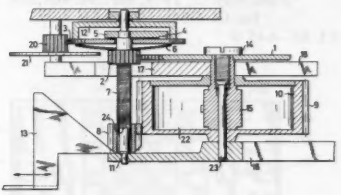
U.S. Cl. 58—83 A **10 Claims**

1. In a watch having an automatic rewind mechanism, comprising a mainspring fixed at a mainspring shaft and housed in a mainspring barrel, said mainspring shaft having a toothed blocking gear in operative engagement with a toothed rewind pinion, the latter mounted on a rewind shaft and including a rotor oscillating upon movement of the watch, the oscillatory motion of said rotor being transmitted to said mainspring via said rewind pinion and blocking gear in order to wind said mainspring, the improvement comprising coupling means between said rotor and said rewind pinion which coupling means is automatically disengaged after the mainspring is wound to a predetermined extent in order to prevent overwinding, which coupling means comprises:

a. a rewind wheel rotatably journalled about the rewind shaft and disposed above and coaxial with the rewind pinion, said rewind wheel being in engagement with the rotor of the automatic rewind mechanism via reduction gear means;

b. means cooperative with the rewind wheel and the rewind shaft whereby rotary motion is imparted to the rewind pinion;

c. an interiorly threaded nut engaging threads on the rewind shaft, said nut having exterior teeth in engagement with teeth provided on the circumference of the mainspring barrel, said nut being driven downwardly along the rewind shaft when the rewind pinion is rotated while the barrel is stopped and driven upwardly along the rewind shaft when the barrel is rotated under the bias of the mainspring and the rewind pinion is stopped, said nut being at its uppermost position on the rewind shaft when the mainspring is unwound and at its lowermost position on the rewind shaft when the mainspring is wound; and



d. a stop member at the lowermost position of the nut on the rewind shaft, whereby upon further winding, torque acting upon the rewind shaft drives the nut downwardly against the stop member resulting in axial upward movement of the rewind shaft, thereby disengaging the coupling between the rotor of the automatic rewind mechanism and the rewind pinion.

3,878,674

STEPPING MECHANISM FOR DIGITAL TIMEPIECE

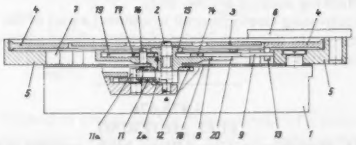
Kurt Muerrle, Pforzheim, Germany, assignor to Pforzheimer Uhren-Rohwerke Rudolf Wehmer, Pforzheim, Germany

Filed Mar. 14, 1974, Ser. No. 451,124

Claims priority, application Germany, Mar. 22, 1973, 2314249

Int. Cl. G04b *19/24*; **G04c** *19/02*

U.S. Cl. 58—125 B **10 Claims**



1. In a timepiece having a central drive element and digital indicating means, the provision of a stepping mechanism for advancing said digital indicating means, said mechanism comprising

a stationary peripheral series of teeth,

a stepping finger, which is mounted to be rotatable and radially displaceable relative to said central drive element and engageable with said series of teeth and coupled to said digital indicating means for joint rotation,

a one-way coupling element, which is eccentric with respect to and operatively connected to said central drive element to revolve around the same in a predetermined

direction and arranged to repeatedly withdraw said stepping finger from said series of teeth after respective intervals of time, and

spring means urging said stepping finger radially outwardly and in said predetermined direction of revolution,

whereby said spring means are arranged to impart a rotation to said stepping figure and digital indicating means in said predetermined direction of revolution when said stepping finger has thus been withdrawn and until said stepping finger reengages said series of teeth.

3,878,675

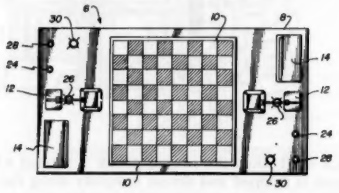
SPACED CHESS CLOCKS

Anatol Prociuk, 4750 S. Tripp Ave., Chicago, Ill. 60632

Filed May 13, 1974, Ser. No. 469,319

Int. Cl. G04b *5/20;* **A63f** *3/00*

U.S. Cl. 58—145 D **7 Claims**



1. An assembly of spaced chess clocks, including support means at least flanking a chess board area,

a player's clock pivotally mounted on support means to the right of the player in one flanking relationship to the chess board area,

an opposing player's clock pivotally mounted on the support means to the right of the opposing player in the other flanking relationship relative to the chess board area,

a player's double pole, double throw multiposition switch on the support means in the area of said player's clock,

an opposing player's double pole, double throw multiposition switch on the support means in the area of said opposing player's clock,

an electric circuit connecting said clocks in the multiposition switches,

circuit means responsive to multiple switch positions of the double pole, double throw switches so that like oriented positions for each of the switches starts a player's clock and stops the opposing player's clock, and unlike oriented positions for each of the switches stops said player's clock and starts said opposing player's clock,

a single throw, double pole activating switch on each of the flanking support means, and

an activating electric circuit to connect a part of the electric circuit to the clock of the opposing player when a player operates said activating switch.

3,878,676

FUEL METERING

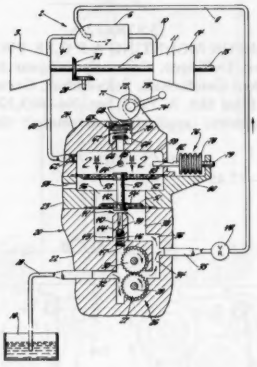
Alan L. Hitzelberger, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 17, 1973, Ser. No. 397,763

Int. Cl. F02c *9/10*

U.S. Cl. 60—39.28 R **10 Claims**

1. A fuel control system adapted to receive fuel under pressure from a source adapted to supply an excess of fuel and to deliver a metered amount of the fuel to a gas turbine engine combustion apparatus through fixed orifice means comprising, in combination, a metered fuel line for connection to the fixed orifice means; a resistance valve in the metered fuel line; a by-pass conduit for diverting fuel from the metered fuel line upstream of the resistance valve; a by-pass valve in the conduit; means responsive to fuel source gauge pressure and to a control gauge pressure related to combustion apparatus air pressure effective to operate the by-pass valve to meter engine fuel flow for acceleration; and operator-controllable means effective to variably limit the control pressure to operate the



by-pass valve to meter engine fuel flow for steady-state operation; the resistance valve establishing a substantially fixed fuel pressure differential between metered fuel pressure and fuel source pressure biasing the by-pass valve to open.

3,878,677

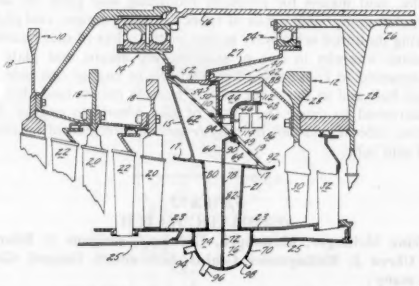
AUXILIARY TURBINE/COMPRESSOR SYSTEM FOR TURBINE ENGINE

Donald C. Colvin, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 10, 1974, Ser. No. 459,823

Int. Cl. F02c *7/26;* **F03b** *3/10*

U.S. Cl. 60—39.14 **6 Claims**



1. In combination a jet engine having compressor means, burner means, and turbine means, said compressor means having a compressor rotor with blades and a turbine/compressor unit connected thereto, said turbine/compressor unit having a rotor mounted for rotation with said rotor of said compressor means, said turbine/compressor unit rotor having blades therearound, shroud means covering the edges of the blades forming a passageway means for fluid flow through the blades of the rotor, said turbine/compressor unit having first opening means for permitting fluid into or out of said passageway means of the turbine/compressor unit, said turbine/compressor unit having a second opening means for permitting fluid into or out of said passageway means of the turbine/compressor unit, a first chamber having a connection with said first opening means, a second chamber having a connection

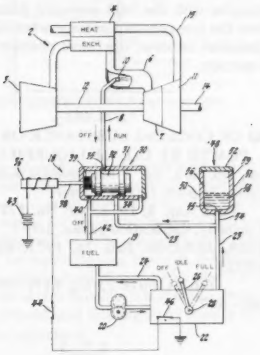
with said second opening means, means for operating said turbine/compressor unit as a turbine comprising means for directing a compressed fluid to said first chamber for entry into said first opening means, said second chamber having third opening means for directing the fluid therein to the blades on said compressor rotor for entry into the burner, means for operating said turbine/compressor unit as a compressor comprising means for connecting said second chamber to a source of fluid, said first chamber having fourth opening means for directing the fluid therein to a device dependent on the compressed air.

3,878,678

GAS TURBINE FUEL SYSTEM

Louis W. Huellmantel; Charles G. Matthews, both of Warren, and Gary E. Nordenson, Mount Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1973, Ser. No. 389,955
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.28 R **4 Claims**



1. A fuel supply and control system for a gas turbine engine including means for supplying fuel under pressure, an engine power control effective to meter fuel flow to the engine over a range from minimum flow to full flow in response to the difference between engine power level request and actual engine power level, a fixed orifice for delivering fuel from the power control into the engine, and an engine fuel line connecting the power control to the orifice, characterized by an accumulator in direct open communication with the fuel line between the power control and the orifice, the accumulator having a fixed volume and containing a fixed mass of compressible fluid and a quantity of fuel variable in accordance with pressure in the fuel line, so that the accumulator diverts fuel from the fuel line upon increase of fuel line pressure, and restores fuel to the line by expansion of the compressible fluid upon decrease of fuel line pressure so as to provide a transient fuel flow effective to maintain combustion during deceleration of the engine.

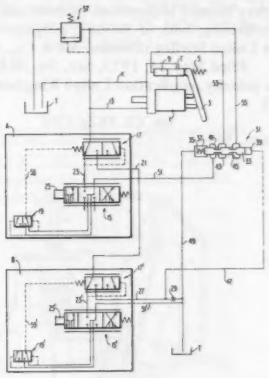
3,878,679

COMPENSATED MULTI-FUNCTION HYDRAULIC SYSTEM

Donald A. Sievenpiper, Kalamazoo, Mich., assignor to General Signal Corporation, Rochester, N.Y.

Filed Aug. 30, 1973, Ser. No. 392,901
Int. Cl. F15b *11/16*
U.S. Cl. 60—422 **10 Claims**

1. A hydraulic system capable of adjusting the output of a variable delivery pump in response to the varying demands of any one of at least two hydraulically operated functions, the system comprising at least two control valve means each capable of performing a separate function, at least two of said control valve means each being connected to its own upstream compensator valve means, said compensator valve means being connected in series one with the other and each being capable of deliverying the necessary amount of hydraulic fluid



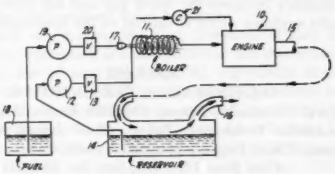
to its respective control valve means in accordance with the full needs thereof and diverting the remainder of said fluid to the next following compensator valve means, and means connected to said compensator valve means farthest from said pump for sensing the total requirement of the system despite the varying demands of said functions and for adjusting the output of the pump in response thereto.

3,878,680

HEAT INJECTION ENGINE APPARATUS

Hector A. Dauvergne, 550 Superior Ave., San Leandro, Calif. 94577

Continuation-in-part of Ser. No. 76,908, Sept. 30, 1970, Pat. No. 3,774,390. This application Nov. 23, 1973, Ser. No. 418,751
Int. Cl. F01k *21/04*
U.S. Cl. 60—511 **8 Claims**



1. A method of energizing the power stroke of a two-cycle engine apparatus having relatively movable components defining a variable-volume spaced cyclically variable between maximum and minimum volumes comprising the steps of

compressing a volume of air in said space from said maximum volume to said minimum volume during a first cycle period,

injecting a high temperature fluid into said compressed air volume proximate the end of said first cycle period investing energy therein and creating a composite fluid mass,

expanding said composite fluid mass within said space imparting movement to said movable components until maximum volume of said space is reached during a second cycle period, and

injecting a relatively cool air volume into said space proximate the end of said second cycle period exchanging heat

from said composite fluid to said cool air volume to condense and expel condensed liquids from said space leaving a volume of air in said space for compression and repeating of said cycles.

3,878,681

HOT GAS ENGINE COMBUSTION CHAMBERS

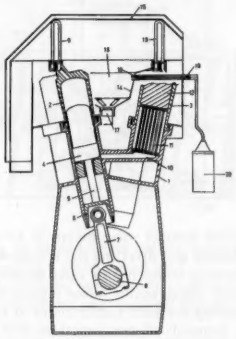
Sven Anders Samuel Hakansson, Malmo, and Mats Inge Moritz, Trelleborg, both of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed May 24, 1973, Ser. No. 363,628

Claims priority, application United Kingdom, June 7, 1972, 26523/72

Int. Cl. F02g *1/04*

U.S. Cl. 60—517 **1 Claim**



1. A hot gas engine combustion chamber of the kind comprising walls bounding the chamber, a fuel atomizer mounted in or on one of said walls, heat-transfer surfaces for transferring heat to the working gas of the engine and extending into or contained within the chamber between said walls, and a spark plug having a spark gap for igniting the fuel atomized by the atomizer, characterised in that the spark gap of the spark plug is located between the atomizer and the heat transfer surfaces at a distance from the atomizer which is longer than the distance between the spark gap and the part of the heat transfer surfaces which is nearest to the spark gap.

3,878,682

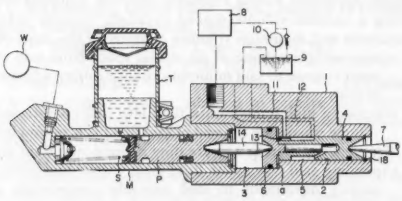
OIL-HYDRAULIC SERVO-MOTOR

Noriyuki Takahashi, Tokyo; Hidehiko Inoue, Ooimachi, and Yoshihiko Toshimitsu, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 11, 1973, Ser. No. 368,681

Int. Cl. F15b *7/00*

U.S. Cl. 60—547 **5 Claims**



1. An oil-hydraulic servo-motor for a control system such as an automotive brake system, comprising a casing having a stepped cylindrical bore with an outer reduced diameter portion and an inner enlarged diameter portion, a master cylinder having one end mounted in said casing, a main piston slidably mounted in said master cylinder for driving the control system, a control valve member operatively associated with an externally operated rod and slidably fitted in said reduced diameter portion of said cylindrical bore, said control valve member having an annular oil passage in the periphery thereof, a drive piston operatively coupled with said main piston and slidably fitted in said inner enlarged diameter portion of the cylindrical bore, said drive piston defining an oil pressure chamber in said cylindrical bore in cooperation with said control valve member, and being in abutment in its rearmost position with the forward end of said control valve member, said oil pressure chamber being at all times in communication with said annular oil passage, and high and low pressure oil passages both extending through the wall of said casing and opening into said reduced diameter portion at axially spaced locations from one another such that said annular passage may be placed into communication with the low pressure passage and disconnected from the high pressure passage when said control valve member assumes an outer normal position in said reduced diameter portion, said annular passage being in communication with the high pressure passage and disconnected from the low pressure passage when said control valve member assumes an inner operative position in said reduced diameter portion.

3,878,683

METHOD OF COOLING SUBSTANCE OR GENERATING POWER BY USE OF LIQUEFIED GAS

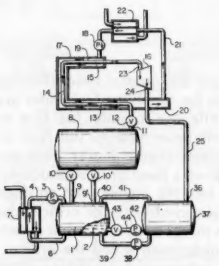
Kenji Imai, No. 801, No. 5 Morinomiya Kodanjutaku No. 2 Morimachi, Joto-ku, Osaka, Japan

Filed Aug. 4, 1972, Ser. No. 277,989

Claims priority, application Japan, July 1, 1969, 44-52326; July 8, 1969, 44-54398; Feb. 26, 1971, 46-9722; Feb. 26, 1971, 46-9723

Int. Cl. F01k *25/00;* **F17c** *7/02*

U.S. Cl. 60—647 **16 Claims**



1. A method for cooling a fluid medium comprising

a. disposing a liquefied gas in a closed container at a temperature and pressure less than the critical temperature and pressure of said gas;

b. heating said liquefied gas to the critical temperature and above the critical pressure;

c. regulating the pressure of said gas to a specified value higher than the critical pressure but less than that detrimental to the equipment involved;

d. subjecting said gas to heat exchange with another heated medium in a heat exchanger thereby heating said gas and cooling said heated medium;

e. adiabatically expanding said gas in a means for transforming said expansion into mechanical energy to reduce the temperature of said gas below the critical temperature;

f. using at least a portion of the power generated by said means to effect the flow of all fluids in the process;

g. liquefying said gas and
h. returning the liquefied gas to said closed container.

3,878,684

DEVICES FOR PROTECTING THE BASES OF STRUCTURES IMMERSED IN A VOLUME OF WATER, AGAINST UNDERMINING

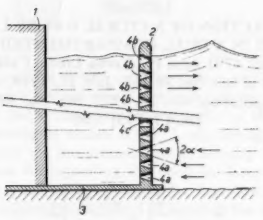
Jacques Edouard Lamy, Fontenay-aux-Roses, France, assignor to C. G. Doris Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines, Paris, France

Continuation-in-part of Ser. No. 358,500, May 9, 1973, Pat. No. 3,846,988. This application Aug. 24, 1973, Ser. No. 391,465

Claims priority, application France, Sept. 15, 1972, 72.32847

Int. Cl. E02b *3/06*

U.S. Cl. 61—3 **13 Claims**



1. A device for protecting the base of a structure immersed in a volume of water, against undermining, comprising a construction forming a curtain in proximity of the structure, and a plurality of passages for the water through said curtain, said passages being disposed in order to produce a pressure drop which is smaller for water flowing towards the structure in the region of the base thereof and flowing away from it at a higher level, than it is for water flowing towards the structure in the region at a higher level, and flowing away from it in the region of the base of the structure.

3,878,685

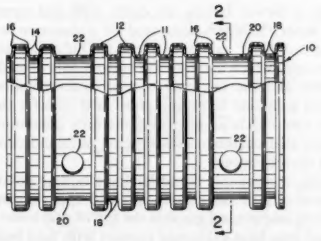
SEPTIC TANK DRAINAGE TILE

John D. Schmunk, Findlay, Ohio, assignor to The Hancock Brick and Tile Company, Findlay, Ohio

Filed Mar. 11, 1970, Ser. No. 18,530

Int. Cl. E02b *11/00;* **F16l** *11/12*

U.S. Cl. 61—11 **17 Claims**



1. A flexible corrugated tube having alternating substantially flat annular peak portions and substantially flat annular valley portions, walls interconnecting the peak and valley portions, at least one recess in one of the peak portions having a bottom contiguous with the valley portions opposite that peak portion, peak end walls at the recess closing the peak portion in which the recess is located, and an opening in the recess for providing communication between the interior and exterior of the tube.

3,878,686

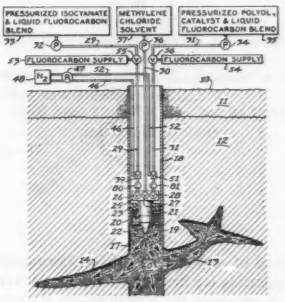
GROUTING PROCESS

John A. Hageman, Nashville; Floyd M. Slagle, Franklin, and Raymond T. Throckmorton, Jr., Nashville, all of Tenn., assignors to Geologic Associates, Inc., Franklin, Tenn.

Continuation-in-part of Ser. No. 308,595, Nov. 21, 1972, abandoned. This application Aug. 29, 1974, Ser. No. 501,493

Int. Cl. E02d *3/14*

U.S. Cl. 61—36 R **7 Claims**


PRESSURIZED ISOCYANATE & LIQUID FLUOROCARBON BLEND
METHYLENE CHLORIDE SOLVENT
PRESSURIZED POLYOL, CATALYST & LIQUID FLUOROCARBON BLEND
FLUOROCARBON SUPPLY
FLUOROCARBON SUPPLY

1. A method of extensively filling voids in subterranean solid formations comprising:

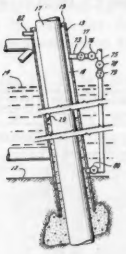
a. feeding a liquid, foam-forming ingredient, comprising an organic isocyanate, in a feed path from a ground surface station to a pre-expander chamber within the region adjacent a void to be filled,
b. feeding a liquid, foam-forming ingredient, comprising a polyol, in a feed path from said ground surface station to said pre-expander chamber,
c. feeding an expanding agent in the form of a liquefied fluorocarbon in a feed path from said ground surface station to said pre-expander chamber,
d. feeding a reaction catalyst with one of said foam-forming ingredients to said pre-expander chamber, in an amount corresponding to the required length of set time for gelling the polyurethane foam material,
e. variably maintaining the flow pressures of said foam-forming ingredients and said fluorocarbon throughout the feed paths of said foam-forming ingredients and said fluorocarbon, by remotely controlling valve means in said feed paths immediately adjacent and upstream of said pre-expander chamber, so that said foam-forming ingredients and said fluorocarbon are in a liquid state immediately prior to release from said valve means into said pre-expander chamber,
f. mixing said liquid foam-forming ingredients and said fluorocarbon under reduced pressure in said pre-expander chamber so that said fluorocarbon expands as a gas within said mixed foam-forming ingredients to produce a fluid, pre-expanded, closed-cell polyurethane froth foam material, inert to reaction with subterranean water in said void, and pressure-resistant to the hydrostatic pressure of any water in said void,
g. discharging said fluid, polyurethane froth foam material into said void with sufficient force to displace any water from said void, and to substantially fill said void within said set time, and
h. permitting said polyurethane froth foam material to gel within said set time within said void and to adhere to the walls of said void.

3,878,687

GROUTING OF OFFSHORE STRUCTURES

Arthur Frank Tragesser, Jr., Houston, Tex., assignor to The Western Company of North America, Houston, Tex.

Filed July 19, 1973, Ser. No. 380,730
Int. Cl. E02b *17/00*; **E02d** *5/64*
U.S. Cl. 61—46 **2 Claims**



1. A method of grouting an offshore structure having at least one supporting leg including a tubular jacket extending downwardly from above the waterline into the sea bed and a piling driven through said jacket deeper into the sea bed with an annular space existing between the inside of the jacket and said piling; said method comprising the steps of

sealing the upper end of said jacket to said piling so as to close said annular space at the upper end of the jacket;

introducing compressed air into said annular space under sufficient pressure to expel substantially all of the water from said space through the lower end of the jacket;

introducing fluid grouting material into said annular space at a point adjacent the lower end of the jacket after the water has been expelled from said space as aforesaid;

simultaneously with the introduction of said grouting material gradually releasing the air pressure in said annular space at a rate which will maintain a pressure sufficient to prevent ingress of water through the lower end of said jacket but insufficient to force a substantial proportion of the grouting material out of the lower end of the jacket, whereby the level of the grouting will rise in the annular space, displacing air upwardly;

stopping the introduction of grouting material when the air pressure is reduced to substantially atmospheric pressure, permitting the grouting material to set,

introducing additional grouting material into said annular space at a point adjacent the upper end of the jacket, and permitting the additional grouting material to set.

3,878,688

BILGE BLOCK REEVING SYSTEM

John Colin Purvis, Gautier, Miss., assignor to Litton Systems, Inc., Beverly Hills, Calif.

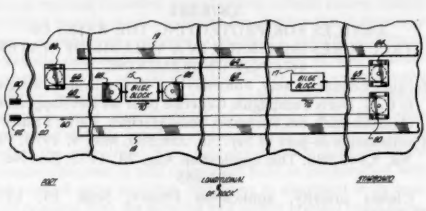
Filed Jan. 7, 1974, Ser. No. 431,435
Int. Cl. B63c *1/00, 1/10*
U.S. Cl. 61—66 **10 Claims**

1. Reeving means for moving bilge blocks, comprising in combination:

a. a first bilge block moveably positioned on a track;

b. cable means connecting moveably said first bilge block to a second bilge block moveably mounted on said track; and

c. said cable means further connecting said first bilge block and said second bilge block to a single powered cable moving source for moving said first bilge block and said second bilge block selectively toward each other and



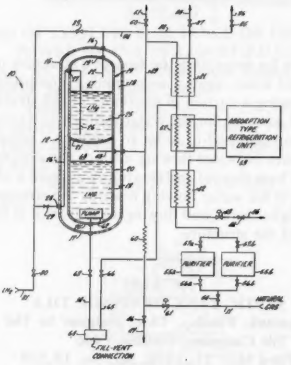
away from each other upon actuation of said cable moving source.

3,878,689

LIQUEFACTION OF NATURAL GAS BY LIQUID NITROGEN IN A DUAL-COMPARTMENTED DEWAR

Carl A. Grenci, 4791 Lesa Pl., Yorba Linda, Calif. 92686

Continuation of Ser. No. 58,262, July 27, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,155
Int. Cl. F25j *1/00*
U.S. Cl. 62—9 **12 Claims**



1. A method for liquefaction of natural gas comprising the steps of:

providing a Dewar having an outer wall and upper and lower inner chambers separated by a common heat exchange bulkhead, said heat exchange bulkhead having a surface area which includes the bottom only of said upper chamber and the top only of said lower chamber and which is sufficient to permit good heat transfer therebetween, said bulkhead providing the only communication between said chambers, there being no liquid communication therebetween;

introducing a cryogenic liquid having a boiling point lower than that of said natural gas into said upper chamber;

introducing said natural gas into the top of said lower chamber and into heat exchange contact with said bulkhead, heat loss to said cryogenic liquid in said upper chamber through said heat exchange bulkhead causing liquefaction of said natural gas in said lower chamber, said liquefied natural gas falling into the lower portion of said lower chamber, away from said bulkhead, to prevent further cooling thereof; and

delivering said liquefied natural gas from said lower chamber to a utilization device.

3,878,690
LIQUID TRANSFER SYSTEM

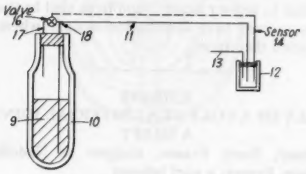
Martin Bell, Helensburg, and Glenn McPherson, Cutherbertson, Clarkston, both of England, assignors to Barr and Stroud Limited, Glasgow, Scotland

Filed Mar. 21, 1973, Ser. No. 343,486

Claims priority, application United Kingdom, May 30, 1972, 25155/72

Int. Cl. F17c *7/02*

U.S. Cl. 62—55 **4 Claims**



1. A vaporizable liquid transfer system comprising a first closed dewar, a second closed dewar, a conduit interconnecting the first and second dewar for transfer of the vaporizable liquid therealong by means of the "Leidenfrost" effect, a vent to atmosphere on the second dewar, sensing means on the second dewar for signalling the need for liquid to be transferred to the second dewar from the first dewar in order to maintain a predetermined level of liquid in the second dewar, a vent tube from the first dewar interconnecting with said conduit and a valve means in said vent tube under the control of the sensing means for causing the transfer of liquid from the first dewar to the second dewar when the valve means is closed and for causing purging of the conduit of liquid when the valve means is opened by venting vaporized liquid in the first dewar through the conduit whereby any globules of liquid remaining in the conduit after the valve means is opened are transferred into the second dewar by said vaporized liquid.

3,878,691
METHOD AND APPARATUS FOR THE COOLING OF AN OBJECT

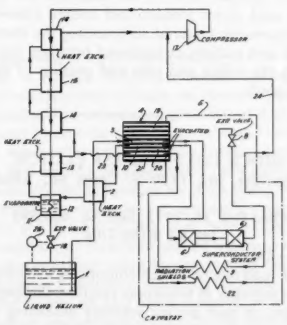
Stefan Asztalos, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Feb. 13, 1974, Ser. No. 441,955

Claims priority, application Germany, Feb. 20, 1973, 2308301

Int. Cl. F25d *31/00*

U.S. Cl. 62—62 **17 Claims**



1. A method of cooling an object with a low-temperature cryogenic fluid, comprising the steps of:

passing the liquefied fluid at a cryogenic temperature continuously from a storage vessel into heat-exchanging relationship with said object and under a displacement pressure;

partly expanding the liquefied fluid to form a gas/liquid phase mixture;

fully vaporizing said mixture by heat exchange to form a completely gaseous fluid;

compressing said fully gaseous fluid to form a compressed fluid and abstracting heat from said compressed fluid by passing same in heat-exchanging relationship with said mixture to supply thereto at least part of the heat required for the complete vaporization of the liquid phase thereof, thereby forming a cooled compressed gas; and

expanding said cooled gas into said vessel to supply liquefied fluid thereto.

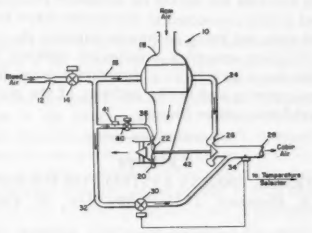
3,878,692
AIRCRAFT CABIN COOLING METHOD AND APPARATUS

Ray R. Steves, Chatsworth, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 22, 1974, Ser. No. 463,214

Int. Cl. F25d *9/00*

U.S. Cl. 62—87 **29 Claims**



1. Aircraft cabin cooling apparatus comprising:

heat exchanger means for cooling inlet air with a cooling fluid medium;

fluid expansion means connected to expand the cooled inlet air to the cabin;

fluid conveying means connected for driving by said fluid expansion means to transport the fluid medium through said heat exchanger means to cool the inlet air in response to the energy of expansion of the cooled inlet air; and

auxiliary drive means connected to drive said fluid conveying means in response to a predetermined inlet air pressure to assist said fluid expansion means in maintaining the cabin cooling requirements.

3,878,693
ELECTRICAL SYSTEM FOR A REFRIGERATOR ICE SERVICE

Luis E. Prada, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 8, 1974, Ser. No. 458,810

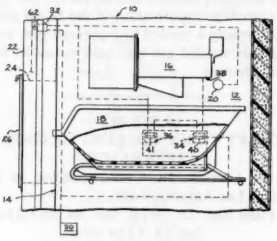
Int. Cl. F25c *5/18*

U.S. Cl. 62—131 **1 Claim**

1. In a refrigerator having a freezing compartment having a main access opening, an automatic ice maker, power means, a movable ice bucket, a main freezer door having a minor access opening associated with the main access opening, an ice access door positioned on the main freezer door and associated with the minor access opening thereof, a freezing compartment light, and means for moving the ice bucket in response to opening and closing the ice access door, said ice bucket being movable by said moving means along a pathway between first and second positions, the improvement comprising:

a main freezer door switch connected to the power means and the light and being actuatable in response to opening and closing the main freezer door;

a double-throw switch connected to the power means in parallel with the main freezer door switch and having one output terminal connected to the automatic ice maker and the other output terminal connected to a hereafter second switch, said double-throw switch being positioned



at a first location adjacent the ice maker in the pathway of the movable ice bucket for actuation thereby; and

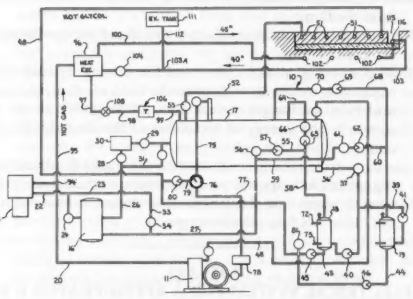
a second switch connected to the double-throw switch and to the light and being positioned adjacent the ice maker at a location spaced a preselected distance from the double-throw switch in a direction toward the minor access opening and in the pathway of the movable ice bucket for actuation thereby.

3,878,694

THERMAL ENERGY SYSTEM FOR ICE RINKS

Richard B. Holmsten, 2127 Dudley Ave., St. Paul, Minn. 55108

Filed May 8, 1974, Ser. No. 467,919
Int. Cl. F25d *23/12*
U.S. Cl. 62—235 **3 Claims**



1. In a refrigeration system for delivering chilled refrigerant directly to a distribution system disposed in a generally horizontal plane beneath a skating rink:

a. compressor means having an inlet conduit for receiving gaseous refrigerant at one pressure, and outlet conduits for delivering an output of gaseous refrigerant to said outlet conduits under a relatively higher pressure;

b. first and second condenser means each being adapted to receive a portion of said refrigerant output, said first condenser means being adapted to convert said gaseous phase refrigerant to liquid phase refrigerant, and means for delivering said liquid phase refrigerant to a first storage vessel wherein said liquid phase refrigerant is received, at least partially evaporated to achieve a refrigeration affect therein, and maintained therein at a relatively lower pressure;

c. means for delivering the refrigerant from said first storage vessel to a skating rink where heat is being extracted;

d. said second condenser means having an enclosure means adapted to convert said gaseous phase refrigerant to liquid phase refrigerant and having heat exchange means for extracting thermal energy therefrom;

e. thermal insulation means disposed along a generally horizontal plane beneath said chilled refrigerant distribution system; and

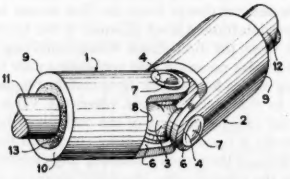
f. said heat exchange means being coupled to a heat distribution system disposed along a generally horizontal plane beneath said thermal insulation means with means being provided to deliver heated fluid from said heat exchange means to said heat distribution system where heat is abstracted therefrom.

3,878,695

ASSEMBLY OF A YOKE OF A UNIVERSAL JOINT WITH A SHAFT

Alfred Pitner, Paris, France, assignor to Nadella, Rueil-Malmaison, France, a part interest

Filed Jan. 5, 1973, Ser. No. 321,360
Claims priority, application France, Jan. 11, 1972, 72.00813
Int. Cl. F16d *3/28*
U.S. Cl. 64—11 R **25 Claims**



1. An assembly comprising a rotary motion transmitting shaft; a universal joint yoke; the yoke comprising a tubular element having one end portion so shaped as to define two branches of the yoke for mounting a cross member of the joint and recessed portions for accommodating angular movements of the joint, the tubular element having an opposite end portion which constitutes a collar, the motion transmitting shaft having an end portion disposed within the collar and a portion extending beyond the collar in a direction away from the yoke branches; and means for elastically interconnecting the shaft and the collar for transmission of a given torque while precluding direct contact between the shaft and the yoke when transmitting said given torque, said means consisting of a sleeve of elastomeric material surrounding the motion transmitting shaft and radially compressed between and in direct contact with the collar and said end portion of the motion transmitting shaft.

3,878,696

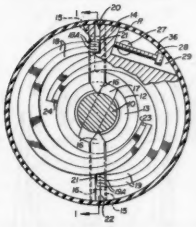
SHOCK LOAD RELEASE CLUTCH

Michael Schneider, Sr., 1120 S. Union St., Alliance, Ohio 44601

Filed Oct. 15, 1973, Ser. No. 406,693
Int. Cl. F16d *7/04*
U.S. Cl. 64—29 **6 Claims**

1. A shock load release clutch comprising a driving member and a driven member in telescopic relation, circumferentially spaced means on said driving member extending outwardly therefrom, pawls movable in radial openings in said driven member for engagement with and normally engaging said means, C-shaped springs having right angularly disposed end portions, positioned about said driven member, an adjustment disc rotatably mounted on said driven member, at least one of

said right angular end portions of said springs engaged in each of said openings, and on said pawls and at least one of the other of said right angular end portions of said springs engaged



in an opening in said adjustment disc and means for adjustably positioning and retaining said adjustment disc relative to said driving member.

3,878,697

PRODUCTION OF BULKY AND STRETCHABLE KNITTED CORD

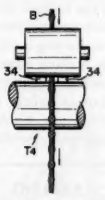
Masami Tsunekawa, 1, Nishihakusan-cho, Naka-ku, Nagoya-shi, Aichi-ken, Japan

Filed Mar. 22, 1973, Ser. No. 344,037

Claims priority, application Japan, Mar. 28, 1972, 47-31073

Int. Cl. D04b *9/100, 15/44, 15/88*

U.S. Cl. 66—146 **4 Claims**



1. An apparatus for producing bulky, hollow knitted cord comprising: a circular knitting machine having means for supplying under a tension at least one strand of yarn, a circular knitting mechanism including a plurality of knitting needles and operating to knit the yarn into a tubular knitted cord and means for conducting the latter away from said needles under tension; a first tension-varying device optionally operable to vary periodically the tension in the yarn being supplied; and a second tension-varying device optionally operable to vary periodically the tension in the cord being conducted away from said needles, wherein said second tension-varying device includes a lower driving roller having spacing members forming therebetween a path for conducting the cord, and an upper driven roller resting on said lower roller so as to be movable away therefrom and operative to clamp the cord between said rollers to apply a tension to the cord, said upper roller being moved away from said lower roller and caused to rest on said members to decrease the tension of the cord when said members are brought between said rollers as said lower roller rotates.

3,878,698

APPARATUS FOR FORMING AND WASHING A FIBROUS WEB

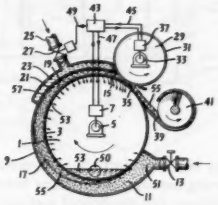
Erik Sture Friksson, and Gosta Ingemar Ingemarsson, both of Karlstad, Sweden, assignors to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Division of Ser. No. 314,164, Dec. 11, 1972, Pat. No. 3,820,452. This application Jan. 21, 1974, Ser. No. 434,935

Claims priority, application Sweden, Dec. 14, 1971, 16035/71

Int. Cl. B05c *3/00;* **B30b** *9/20*

U.S. Cl. 68—22 R **4 Claims**



1. In apparatus for forming a layer of fibrous material from a suspension of the fibrous material in a suspension liquid and for washing the layer with a wash liquid, the apparatus including a member permeable to the liquids and substantially impermeable to the fibrous material, means for moving the permeable member along an endless path, a member positioned opposite the permeable member and defining with the permeable member a layer-forming space the thickness of which diminishes from the upstream end of such space to the downstream end, relative to the direction of movement of the permeable member, means for supplying the suspension of fibrous material to the upstream end of the forming space, a liquid permeable element positioned opposite a portion of the permeable member immediately downstream from the downstream end of the layer-forming space and defining with the permeable member a washing zone, means for supplying washing liquid under pressure through the permeable element to the washing zone, and a press roll positioned opposite the permeable member and defining therewith a press nip adjacent the downstream end of the washing zone, the improvement comprising means for monitoring the pressure in the layer of fibrous material at the press nip and producing a nip-pressure signal indicative thereof, means for varying the volumetric rate of flow of fibrous material through the nip and for producing a rate signal indicative thereof, and means for controlling the volumetric flow rate of washing liquid to the washing zone in response to said rate signal.

3,878,699

CONTINUOUS WASHING MACHINE

Hans Steinort, Itzum/uber Hildesheim, Germany, assignor to Senkingwerk GmbH, Hildesheim, Germany

Filed Feb. 7, 1973, Ser. No. 330,249

Claims priority, application Germany, July 29, 1972, 2237465

Int. Cl. D06f *37/08*

U.S. Cl. 68—145 **6 Claims**

1. In a continuous washing machine,

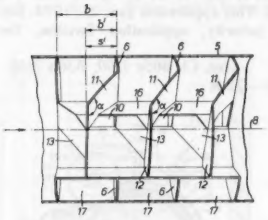
a rotatable washing drum,

means dividing the interior of the drum into a plurality of separate washing chambers,

means for moving washing within the respective washing chambers during rotation of the washing drum in one sense, and

means for feeding batches of washing from one chamber to an adjacent chamber during rotation of the drum in the reverse sense, said feed means comprising

means defining a separate helical feed passage for each of the plurality of separate chambers arranged on one side of each chamber, said passage-defining means comprising means defining helically inclined feed surfaces, and



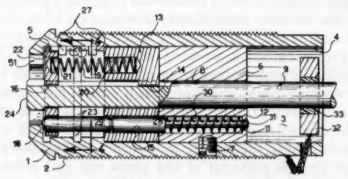
means defining surfaces partially surrounding the helical surface-defining means, said dividing means being in the form of partitions, and the helical surface-defining means comprising portions of the said partitions, said portions being bent to extend across about half of the width of each chamber.

3,878,700

LOCK FOR OPERATION BY AN AXIALLY BITTED KEY

Pedro Lopez, 2295 de Londres St., St. Laurent, Quebec, Canada

Filed June 18, 1974, Ser. No. 480,589
Int. Cl. E05b *27/08*
U.S. Cl. 70—363 **8 Claims**



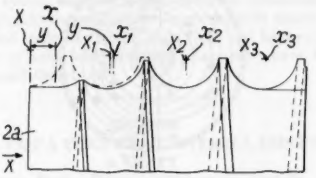
1. A lock for operation by an axially bitted key and comprising a casing having an aperture therein, a core fixedly secured to said casing into said aperture, a bolt actuating stem rotatably extending through said core and projecting outwardly therefrom into said aperture, a plug engaged around said bolt actuating stem and secured thereto for rotation therewith into said aperture adjacent one face of said core, an axially displaceable rotation locking body surrounding said stem on the opposite side of said plug relative to said core, and secured to said stem for rotation therewith into said aperture, said core having tumbler cavities extending therein from said one face thereof and lengthwise of said stem, said plug and said rotation locking body having tumbler passages extending therethrough lengthwise of said stem and arranged for endwise registration with said tumbler cavities, tumblers extending into said cavities respectively and arranged for endwise displacement into the latter and the corresponding tumbler passages, first biasing means urging said rotation locking body away from said opposite face of said plug, second biasing means urging said tumblers for engagement into said tumbler passages, and abutment means provided into said aperture and constructed and arranged to prevent rotation of said body in all axial positions other than a predetermined axial position relative to said stem.

3,878,701

METHOD AND APPARATUS FOR PRODUCING ROLLED METAL BALLS FROM BARS OR RODS

Kenneth Charles Skinner, Gloucester, England, assignor to Helipebs Limited, Ore, England

Filed Feb. 11, 1974, Ser. No. 441,221
Int. Cl. B21h *1/14*
U.S. Cl. 72—71 **7 Claims**



1. An apparatus for rolling balls from metal stock, the apparatus comprising a pair of generally-cylindrical forming rolls, each of which has a rotary axis and a helical groove of progressively changing profile, means for supporting the rolls in spaced relation so that the axes thereof are parallel to a median plane between them and the helical grooves register to define between them a space for receiving a workpiece fed axially into the space along an axis lying in the median plane, means for driving said forming rolls to roll the workpiece, the groove of each forming roll having a base of substantially constant radius with reference to the rotary axis of the forming roll and being defined by a helical rib with leading and trailing edges having a concave part-circular profile tangential to the base of the groove and having the same, substantially-constant, radius of curvature, the trailing edge of the helical rib, as defined by the point at which the part-circular profile thereof becomes tangential to the base of the groove, having a pitch which is substantially constant along the length of the roll, the leading edge of the helical rib, as defined by the point at which the part-circular profile thereof becomes tangential to the base of the groove, having a pitch which is substantially less than the pitch of the trailing edge and gradually increases along the length of the roll until the pitches of the trailing and leading edges of consecutive helices of said rib coincide and become substantially constant to define a portion of the groove of constant semicircular profile.

3,878,702

ROUND BAR STRAIGHTENER-POLISHER MACHINE

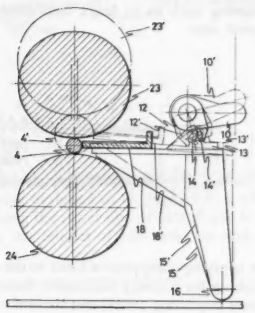
Valentin Brouard Madariaga, Echevarri (Bilbao), Spain

Filed Dec. 6, 1973, Ser. No. 422,204
Claims priority, application Spain, Dec. 6, 1972, 186.502
Int. Cl. B21b *19/10*
U.S. Cl. 72—100 **6 Claims**

1. In a round bar straightener-polisher machine of the type including a lower rotary roller; the vertical position of said lower roller being fixed; an upper rotary roller positioned above said lower roller; a bar to be treated being longitudinally moved in a horizontal direction between said lower and upper rollers; frame means supporting said upper roller for selectively vertically moving said upper roller toward or away from said lower roller to accomodate between said upper and lower rollers bars of differing diameter; a pair of lateral guide means positioned to contact opposite sides of a bar positioned between said upper and lower rollers for guiding such bar during movement thereof; and means for selectively moving said pair of lateral guide means toward or away from each other to accomodate therebetween bars of differing diameter; the improvement wherein:

said means for moving said lateral guide means comprises a pair of guide supports, one each having mounted thereon one of said lateral guide means, said guide sup-

ports each being pivotally mounted about shaft means for allowing pivotal movement of said lateral guide means about axes extending parallel to said horizontal direction; and further comprising:



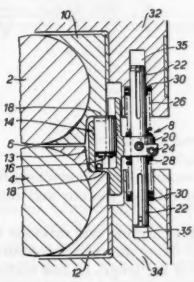
control means operatively connected between said frame means supporting said upper roller and said guide supports for transferring vertical movement of said upper roller into pivotal movement of said lateral guide means about said axes.

3,878,703

ROLLING MILLS

Leslie Ernest Mills, Newbridge, and Anthony Ernest Thomas, Merthyr Tydfil, both of Wales, assignors to British Steel Corporation, London, England

Filed Sept. 28, 1973, Ser. No. 401,644
Int. Cl. B21b *31/08*
U.S. Cl. 72—238 **6 Claims**



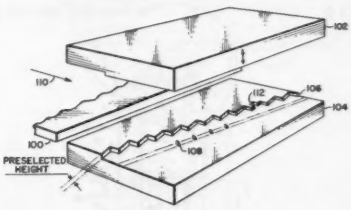
1. A rolling mill comprising at least a pair of work rolls which are supported for rotation in suitable chocks retained in a mill frame, a plurality of actuators which are arranged to bear against spaced abutment surfaces on the chocks whereby in use to tend to increase the gap at the nip, support means for the actuators enabling the actuators to be supported independently of the work roll chocks, each said support means comprising a guide spaced from the adjacent work roll chock and extending along the direction of roll adjustment, each actuator including a collar freely slidable on its guide so that each actuator is movable on its guide to an equilibrium position, each actuator being rotatable on its guide, and resilient means acting on the collar of each actuator biasing its actuator to said equilibrium position.

3,878,704

METHOD OF FORMING FRAGMENTATION WRAP FOR EXPLOSIVE WEAPONS

Frank M. Shea, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 145,695, May 21, 1971, abandoned. This application June 25, 1973, Ser. No. 373,059
Int. Cl. B21d *31/02*
U.S. Cl. 72—326 **6 Claims**



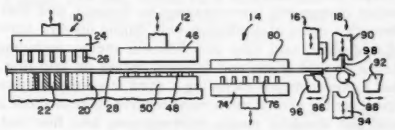
1. A method of fabricating a fragmentation wrap for explosive weapons comprising the steps of feeding a planar sheet of metal in one direction through opposed cooperating dies; shearing said sheet a preselected depth to form a partial fragmentation pattern in the sheet; progressively advancing said sheet in linear increments and repeating the preselected depth shearing; flattening said sheet to its original thickness after each increment to define the boundaries of a predetermined overall pattern wherein the partial patterns combine to define individual fragment elements joined together by partially sheared areas; and wrapping the fabricated sheet around the outer surface of an explosive weapon, said fabricated sheet fragmenting into the individual fragment elements upon detonation of the explosive weapon.

3,878,705

BEARING CAGE AND METHOD FOR PRODUCING A BEARING CAGE

Roger L. Iffland, 100 East Hill Rd., Torrington, Conn.

Division of Ser. No. 249,087, May 1, 1972, abandoned. This application Oct. 4, 1973, Ser. No. 403,673
Int. Cl. B21d *28/00*
U.S. Cl. 72—333 **3 Claims**



1. In a system for forming a bearing cage from strips of solid flat stock:

a die having at least one substantially rectangular opening;

a movable punch spaced from and aligned with the substantially rectangular opening in the die, said punch having less width than the width of the substantially rectangular opening in the die, and also having at least one groove formed on each longitudinal side;

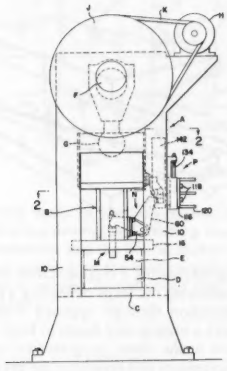
means for feeding solid flat stock between the punch and the die whereby substantially rectangular pockets are formed in the flat stock having longitudinal tapering sides with those portions formed by the grooves in the punch extending further into the pockets than the remaining portions; and

means located downstream for pressing the further extending portions into projections.

3,878,706
KNOCKOUT ARRANGEMENT FOR PRESSES

Gordon C. Berry, Freeport, and Harry E. Keithley, Battle Creek, both of Mich., assignors to Gulf & Western Manufacturing Company (Hastings), Southfield, Mich.

Filed Feb. 25, 1974, Ser. No. 445,682
Int. Cl. B21d *45/00*
U.S. Cl. 72—345 8 Claims



1. A knockout arrangement for a press having a frame and a slide supported by said frame for reciprocating movement upwardly and downwardly for performing work on workpieces comprising, knockout pin means supported by said slide for reciprocating movement between extended and retracted positions relative thereto, a first lever mounted on said slide for oscillating movement between first and second positions about a first axis and having an end spaced from said first axis, a second lever having opposite ends and mounted on said slide for oscillating movement about a second axis intermediate said opposite ends, said opposite ends of said second lever interengaging one with said pin means and the other with said end of said first lever, whereby a cycle of oscillation of said first lever from said first position to said second position and back to said first position respectively extends and retracts said pin means, said slide and frame carrying cam and follower means cooperably interengaging to displace said first lever through a cycle of oscillation only during upward movement of said slide, said cam and follower means including cam means on said frame and follower means on said first lever, said follower means including a third lever mounted on said first lever for pivotal movement relative thereto about a third axis, and shoulder means interengaging said first and third levers in a first relative position and for pivotal movement together in one direction about said first axis from said relative position, said third lever being pivotal relative to said first lever in the opposite direction about said first axis from said relative position, said cam follower means engaging said cam means to pivot said third lever in said one and opposite directions respectively during upward and downward movement of said slide.

3,878,707
TUBE CORRUGATING APPARATUS AND METHOD

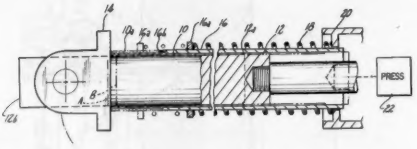
Tom H. Thompson, Milford, Mich., assignor to Robert C. Hauke, Holly and Claude A. Petalidis, Southfield, both of, Mich.

Filed May 11, 1973, Ser. No. 359,456
Int. Cl. B21d *9/14*
U.S. Cl. 72—354 9 Claims

1. A tubing corrugating apparatus comprising:

a mandrel disposed through the interior of a length of tubing in sliding engagement with the inner surface of said length of tubing;

a sleeve slidable on the outer surface of said length of tubing in sliding engagement therewith, one end of said sleeve being initially positioned proximate one end of said length of tubing such as to leave unprotected a short length thereof; and

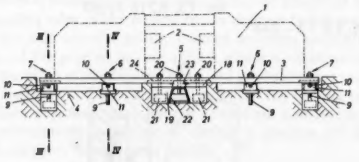


means applying compressive force to the ends of said length of tubing for forming successive radially outward corrugations beginning at said end thereof unprotected by said sleeve, said corrugations upon formation operating to progressively cammingly retract said sleeve from said end.

3,878,708
FORGING PRESS

Bruno Kralowetz, and Hubert Grill, both of Steyr, Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed Aug. 5, 1974, Ser. No. 494,758
Claims priority, application Austria, Sept. 25, 1973, 8255/73
Int. Cl. B21j *13/04*
U.S. Cl. 72—407 12 Claims



1. A forging press which comprises

a horizontal machine frame,

two press rams mounted in said machine frame for horizontal movement relative thereto and operable to oppose each other,

an understructure carrying said machine frame,

fixing means for fixing said understructure to a foundation at the center of the length of said understructure, and

bearing support means for supporting portions of said understructure which are remote from the center of its length on said foundation to permit of a sliding longitudinal movement of said portions relative to said foundation.

3,878,709
AUTO BODY TREATMENT IMPLEMENT

Guy Norman Chartier, 34 S. Carcliffe Garden, West Hill, Ontario, Canada

Filed June 4, 1973, Ser. No. 366,444
Int. Cl. B21j *13/02*; B66f *3/00*
U.S. Cl. 72—457 3 Claims

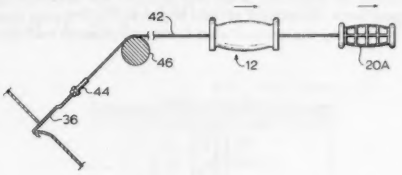
1. A hand operated tool, including:

a longitudinally extending shank of flexible material,

said shank surface being shaped to allow sliding of a member longitudinally therealong,

a mass located on and slidable on said shank,

an element mounted on said shank adjacent one end thereof, designed to act as a stop for said mass, moving in one direction,



said mass being designed to be grasped in a hand,

said element being designed to be grasped in a hand,

means for coupling the other end of said shank to metal to be shaped by the impact of said mass on said stop element.

3,878,710

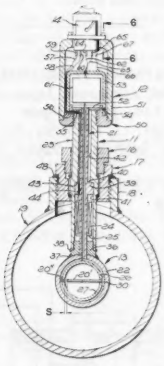
DENSITOMETER

Charles Eveleigh Miller, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,499

Int. Cl. G01n *9/00*

U.S. Cl. 73—32 A **6 Claims**



1. A densitometer comprising: a probe including a leaf spring cantilevered vane having a free end and a fixed end, said probe including a housing and first means connected to said housing mounting said vane fixed end in a substantially fixed position relative to said housing; second means having an input lead and being actuable to vibrate said vane free end; third means having an output lead and being mounted contiguous to said vane in a manner to produce a first output signal on said output lead thereof; an output junction; fourth means connecting said third means output lead to said output junction; and fifth means connecting said output junction to said second means input lead; one of said fourth and fifth means including an amplifier of a gain sufficient to cause said vane and said second, third, fourth and fifth means to act as a closed loop electromechanical oscillator in which the loop gain is adequate to sustain vibration of said vane continuously, the signal appearing at said output junction changing in frequency with the density of the fluid in which said vane is immersed; and sixth means having input and output leads, said sixth means input lead being connected from said output junction, said sixth means being actuable in response to the frequency of the output signal appearing at said output junction for producing an output signal on said sixth means output lead of a magnitude directly proportional to the density of the fluid in which said vane is immersed.

3,878,711

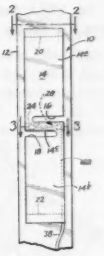
EXTENSOMETER

George J. J. Randolph, Jr., 1505 177th Ave. N.E., Bellevue, Wash. 98008

Filed Sept. 24, 1973, Ser. No. 400,186

Int. Cl. G01b *7/16*

U.S. Cl. 73—88.5 R **4 Claims**



1. An extensometer comprising

an elongated bar including, intermediate its ends, a pair of longitudinally spaced, transversely overlapping slots which extend into the bar from opposite sides thereof,

means located adjacent the ends of said bar accommodating attachment thereto at spaced-apart points to an external body,

means in said bar between said slots defining an elongated recess having one end adjacent the base of one of the slots and its opposite end adjacent the base of the other slot, and

an elongated electromechanical deflection-sensitive device mounted in said recess with one of its ends anchored therein adjacent one end of the recess and its other end anchored therein adjacent the other end of the recess.

3,878,712

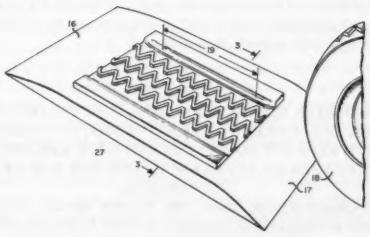
PRESSURE RECORDATION

Ned Chapin, Box 464, Menlo Park, Calif. 94025

Filed Nov. 5, 1973, Ser. No. 412,904

Int. Cl. G01m *17/02*

U.S. Cl. 73—146 **12 Claims**



1. A device for recording within a range of pressures, the pressure exerted by one surface relative to another; said device comprising a reference sheet of material which is generally incompressible when subjected to pressure within said range of pressures, and a recording slab of a material which is compressible to a degree proportional to the applied pressure

when it is subjected to pressure within said range of pressures, said slab and reference sheet forming a lamination which is insertable between said two surfaces for compression of said slab against said reference sheet to record said pressure by the degree of said compression, and said recording slab being of a material which is inelastically compressed when subjected to pressure within said range of pressures to thereby retain a record of the applied pressure.

3,878,713

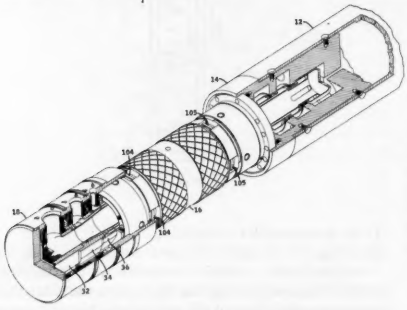
WIND TUNNEL BALANCE FOR SUPPLYING COMPRESSED FLUID TO THE MODEL

Philip J. Mole, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Nov. 16, 1973, Ser. No. 416,486

Int. Cl. G01m 9/00

U.S. Cl. 73—147 **10 Claims**



1. An improved strain gage balance of the type adapted to be received in a cavity within the body of a test model disposed in a flow field of a test tunnel for measuring component forces and moments applied thereto, said balance adapted for mounting at one end to said tunnel by means of a sting and at the other end to said model, wherein the improvement comprises:

an outer sleeve subject to said forces and moments;

a hollow core coaxially positioned in said sleeve, said core having an outside dimension less than the inside dimension of a portion of said sleeve, thereby forming a gap between said core and sleeve to permit displacement of said sleeve relative to said core;

a plurality of webs positioned near each of the two ends of said sleeve to transmit said loads and moments from said sleeve to said core;

at least one fluid conduit disposed within said hollow core and extending beyond the ends of said core; and

a plurality of bellows located near a first end of said conduit between said conduit and said test model to conduct fluid from said conduit to said model.

3,878,714

APPARATUS FOR DETERMINING THE VELOCITY AND THE DIRECTION OF RELATIVE MOTION THEREOF WITH RESPECT TO A FLUID AND WITH REGARD TO A DIRECTION OF REFERENCE, AND THE USE OF SAID APPARATUS

Jean-Claude Protta, Onex, and Antoine Savary, Chatelaine, both of Switzerland, assignors to OMF California, Inc., Los Angeles, Calif.

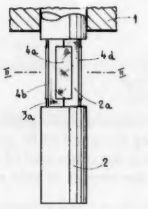
Filed Jan. 8, 1973, Ser. No. 321,707

Claims priority, application Switzerland, Jan. 17, 1972, 659/72; Sept. 21, 1972, 16916/72

Int. Cl. G01w 1/02

U.S. Cl. 73—189 **9 Claims**

1. Apparatus for determining the velocity and the direction of relative motion thereof with respect to a fluid and with regard to a direction of reference, said apparatus comprising, a probe including a rod constructed to be dipped into said fluid and subjected to a bending force caused by said fluid, a first detector for determining the force component in the direction of reference, a second detector for determining a second force component at right angles to the first one, means for measuring the ratio of said force components and determining the angle between said force and the reference direction, said means including two divider circuits, one circuit constructed to measure the direct ratio of a voltage proportional to one of the force components to a voltage proportional to the other force component, and the other circuit constructed to measure the reverse ratio, and a device using said components to ascertain the velocity of the motion of the apparatus relative to said fluid.



3,878,715

VORTEX-TYPE FLOWMETER

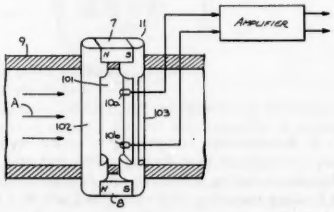
Tamotsu Kobayashi, Yokohama, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Nov. 12, 1973, Ser. No. 414,800

Claims priority, application Japan, Nov. 30, 1972, 47-120495

Int. Cl. G01f 1/00; G01p 5/10

U.S. Cl. 73—194 B **5 Claims**



1. A flowmeter of the vortex type comprising:

A. a flow conduit forming a passage for the fluid to be measured;

B. a vortex shedder mounted in said conduit transversely with respect to the direction of fluid flow, said shedder having an axially-extending gap at right angles to said direction of flow;

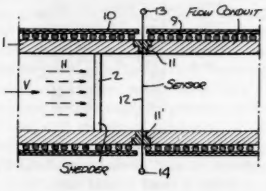
C. permanent-magnet means incorporated in the body of said shedder to establish a magnetic field across said gap whose lines of flux are parallel to said direction of flow; and

D. a pair of electrodes mounted on said shedder at axially-spaced positions in said gap to produce a signal whose frequency is a function of flow rate.

3,878,716
KARMAN VORTEX SHEDDER

Yasuo Asada, Tokyo, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Dec. 19, 1973, Ser. No. 426,315
Int. Cl. G01f 1/00; G01p 5/00
U.S. Cl. 73—194 B **5 Claims**



1. A Karman vortex flowmeter comprising:

A. a flow conduit forming a passage for the fluid to be measured,

B. a vortex shedder mounted in said conduit transversely with respect to the direction of fluid flow, to produce fluidic oscillations whose frequency is a function of flow rate,

C. means to establish a magnetic field within said conduit whose lines of flux are parallel to said direction of flow,

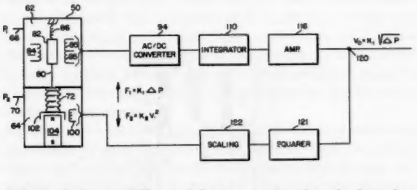
D. wire means supported for vibration in said conduit and physically responsive to said oscillations whereby said means are caused to vibrate in a direction intersecting said lines of flux to induce a signal therein whose frequency is a function of flow rate, and

E. means coupled to said wire means and responsive to the frequency of said signal to indicate flow rate.

3,878,717
PRESSURE TO ELECTRICAL ANALOG RATE OF FLOW SIGNAL GENERATOR

John R. Silva, Rehoboth, Mass., assignor to General Signal Corporation, Rochester, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,151
Int. Cl. G01f 1/00; G01p 5/14
U.S. Cl. 73—205 R **1 Claim**



1. A force balance differential pressure to electrical analog rate of flow signal generator wherein the improvement comprises:

a. a system dynamic vertical differential pressure balance assembly comprising,

1 upper and lower coaxial chambers having respective pressure input ports adapted to compare pressure inputs to those ports,

2 a vertical rod axially operable by sensing an imbalance force characteristic of a difference in pressure in the respective chambers,

3 a magnetic structure having a balance winding for generating a force when energized opposing the imbalance force,

4 a differential transformer having a core operated by the rod and effective to deliver an alternating current output signal indicative of the position of the rod,

b. an AC/DC converter for converting the alternating current output signal into a direct current signal,

c. an integrator for integrating the direct current signal and providing an integrated signal output,

d. an amplifier responsive to the integrated signal for delivering an electrical rate of flow signal output,

e. squaring circuit means responsive to the rate of flow signal for delivering a squared signal output,

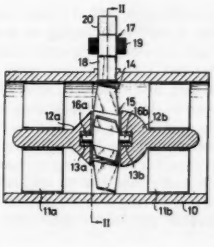
f. scaling means responsive to the squared signal for delivering a scaling signal output varying in proportion to variation of the squared signal, and

g. circuit means for energizing the winding of the balance assembly in response to the scaling signal.

3,878,718
TURBINE-TYPE FLOWMETER

Shigeo Sugiyama, Fujisawa; Masahiro Soya, Kawasaki, and Hiroyuki Amemori, Tokyo, all of Japan, assignors to Tokico Ltd., Kawaskai, Kanagawa-ken, Japan

Filed July 24, 1973, Ser. No. 382,182
Claims priority, application Japan, July 27, 1972, 47-75347; Jan. 22, 1973, 48-9370
Int. Cl. G01f 1/00
U.S. Cl. 73—231 R **8 Claims**



1. A turbine-type flowmeter comprising:

a flowmeter outer casing having therewithin a flowpath for flow therethrough of a fluid whose flowrate is to be measured;

a turbine rotor rotatably supported within said casing and supporting a plurality of turbine blades of magnetic material rotated by said fluid flowing through said flowpath at a rotational speed in accordance with the flowrate of the fluid;

a yoke structure mounted on and partly within the wall of the casing and having an outer end part, a shank body, and a plurality of inner end parts positioned to confront the radially outer ends of the blades as the blades rotate, at least more than one of said inner end parts being so arranged as to lie within a space interval corresponding to the space interval between two adjacent blades of said plurality of turbine blades;

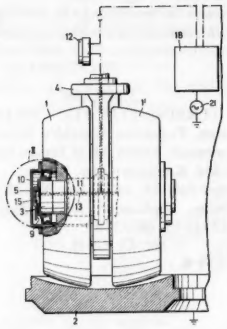
a single permanent magnet disposed in contact with the outer end part of said yoke structure, said permanent magnet producing magnetic flux passing through the yoke structure and inner end parts thereof; and

coil means wound around a part of the yoke structure for generating output signals induced by the magnetic flux produced within the yoke structure and changing in accordance with changes of the magnetic flux each time one of the turbine blades passes through said position to successively confront each of the inner end parts of the yoke structure as the blades thus rotate.

3,878,719
FLUID LEVEL MONITORING DEVICE

Josef Luttmann, Ahlen, and Clemens Schnuckel, Stromberg, both of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed July 3, 1973, Ser. No. 376,136
Claims priority, application Germany, July 6, 1972, 251504
Int. Cl. G01f 23/26
U.S. Cl. 73—304 C 2 Claims



1. For use in combination with a closed bearing assembly comprising an axle, a bearing including an inner race fixedly mounted on said axle by a clamping cover plate and an outer race, a rotary member mounted upon said outer race for rotation upon said axle, and a closure cap sealingly secured to said rotary member to define a lubricating fluid containing chamber enclosing said bearing and said cover plate;

apparatus for monitoring the level of lubricating fluid contained in said chamber comprising a capacitative measuring probe mounted at one end on said cover plate within said chamber and having a first capacitor plate disposed in spaced parallel opposed relationship to said cover plate;

insulating spacer means carried by one of said plates and in engagement with the other of said plates for maintaining said plates spaced apart; and

electric circuit means operatively connected to said first plate and said cover plate to constitute said cover plate as a second capacitor plate, the electrical capacitative reactance of said first and second plates being variable in accordance with changes in the level of lubricating fluid within said chamber.

3,878,720
TUBE SHAPING APPARATUS FOR RADIUS-BENDING, END-FLARING AND THE LIKE

Ronald R. Stange, Denver, and Gary B. Ward, Aurora, both of Colo., assignors to Tools for Bending, Inc., Denver, Colo.

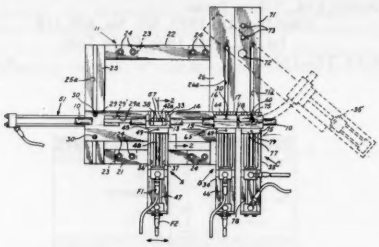
Filed Dec. 27, 1971, Ser. No. 212,146
Int. Cl. B21d 11/00
U.S. Cl. 72—310 12 Claims

1. In shaping apparatus for tubes and the like, the combination comprising:

a pivotal arm having gripping means at its free end adapted to grip a leading section of a tube for swinging movement about a pivot joint located a preselected distance away from the longitudinal axis of the tube,

stationary guide means adjacent the free end of the pivotal arm operative to substantially embrace and slidably support a section of the tube behind the leading section for guide longitudinal movement and free passage of the tube relative to the guide means during said swinging movement of the pivot arm in a direction transverse to the longitudinal axis of the tube, and

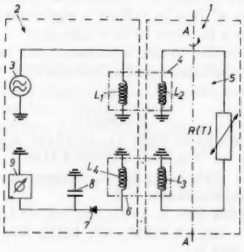
drive means disposed rearwardly of said guide means for advancing said tube relative to the guide means and imparting rotation to said pivotal arm about its pivot point whereby to effect a bend in said tube.

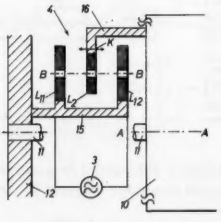


3,878,721
ARRANGEMENT FOR MEASURING THE TEMPERATURE OF A MOVING OBJECT

Günther Nath, Munich, Germany, assignor to J. M. Voith GmbH, Heidenheim, Brenz, Germany

Filed Mar. 29, 1973, Ser. No. 346,826
Claims priority, application Germany, Apr. 1, 1972, 2216091
Int. Cl. G01k 7/16, 13/08
U.S. Cl. 73—351 42 Claims





1. An arrangement for measuring the temperature of an object mounted for movement in a predetermined manner, comprising, in combination, a temperature-responsive circuit at least part of which is located on said object and including moving inductor means mounted for movement with said object along a predetermined path of motion; stationary first means for applying an input signal to said temperature-responsive circuit to cause the same to generate a temperature-dependent output signal; stationary second means responsive to said temperature-dependent output signal, and including measuring means for determining the temperature of said object by measuring the response of said second means

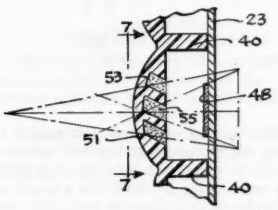
to said temperature-dependent output signal, at least one of said first and second means comprising stationary inductor means, one of said stationary and moving inductor means comprising at least one pair of spaced electrically connected inductor coil means, and the other of said stationary and moving inductor means comprising an additional inductor coil means, said inductor coil means being so oriented that upon movement of said object in said predetermined manner said moving inductor means passes by said stationary inductor means to establish inductive coupling between said pair of inductor coil means and said additional inductor coil means, and said coil means being furthermore so oriented that a change in the orientation of the path of motion of said moving inductor means with respect to said stationary inductor means causes a decrease in the coupling between said additional coil means and one coil means of said pair of coil means and concomitantly causes an increase in the coupling between said additional coil means and the other coil means of said pair of coil means to compensate for said decrease.

3,878,722

REVERSIBLE, DISPOSABLE CLINICAL THERMOMETER

Nelson Allen Crites, Columbus, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 2, 1973, Ser. No. 345,941
Int. Cl. G01k *11/06*
U.S. Cl. 73—356 **9 Claims**



1. In a thermometer comprising at least one cell defined by top, bottom and side walls; and indicia of temperature mounted on the surface of said top wall facing the interior of said cell; said bottom wall comprising a window for viewing said indicia of temperature therethrough; and a temperature-responsive material that is transparent in its liquid state and not transparent in its solid state disposed between said indicia and the outside of said bottom wall, said material selected for its capacity to melt when exposed to a temperature equal to or in excess of that represented by said indicia; the improvement which comprises:

a plurality of bores substantially spaced from said indicia on the inside of said window of said bottom wall, said bores being substantially opposite said indicia and having said temperature-responsive material permanently disposed therein by the capillary attraction between said bore and material, whereby said thermometer is rendered reversible.

3,878,723

THERMAL NOISE POWER THERMOMETRY

Theron V. Blalock, Knoxville, and Casimer J. Borkowski, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 15, 1974, Ser. No. 461,320
Int. Cl. G01k *7/30*
U.S. Cl. 73—359 **8 Claims**

1. A system for measuring temperature, comprising:

a sensing resistor disposed in a medium whose temperature is to be measured;

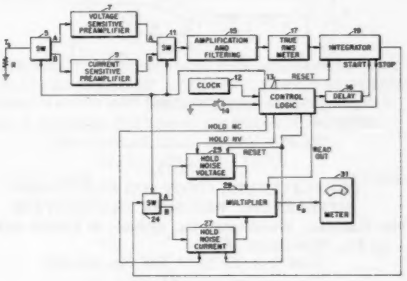
a voltage-sensitive preamplifier for sensing the AC thermal noise voltage generated in said sensing resistor;

a current-sensitive preamplifier for sensing the AC thermal noise current generated in said resistor and generating a signal at an output thereof having an amplitude proportional to the thermal noise current;

a first switching means for alternately connecting said sensing resistor to the inputs of said voltage-sensitive preamplifier and said current-sensitive preamplifier;

an amplifier including a plurality of cascaded passive filters for controlling the system frequency bandpass;

a second switching means for alternately connecting the outputs of said voltage-sensitive preamplifier and said



current-sensitive preamplifier to said amplifier in sequence with said first switching means;

a true root means squared detector means for generating DC output signals proportional to the root mean squared noise signals applied to the input thereof;

first and second storage means for storing said DC signals detected from said voltage-sensitive preamplifier and said current-sensitive preamplifier, respectively; and

a signal multiplier means responsive to stored DC signals in said first and second storage means for providing an output signal having an amplitude proportional to the product of the detected thermal noise voltage signal and thermal noise current signal, which is indicative of the absolute temperature of said medium.

3,878,724

PHYSICALLY REALIZABLE OPTIMUM PREDICTOR FILTER TECHNIQUE FOR TRANSDUCERS, SENSORS, AND OTHER MASSIVE DEVICES, BASED UPON INVERSE TRANSFERS FUNCTION SYNTHESIS

Gerald F. Allen, 532 Bucknell Ave., Claremont, Calif. 91711

Filed Nov. 16, 1972, Ser. No. 307,019
Int. Cl. G01k *7/24, 3/04;* **G06a** *7/19*
U.S. Cl. 73—362 AR **14 Claims**

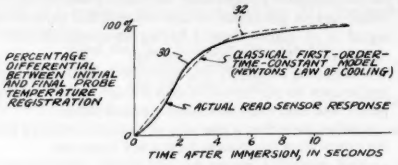
1. A method of reducing the response time of a sensor positioned in a medium under observation comprising the steps of:

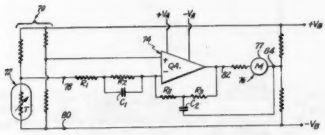
a. placing the sensor in the medium under observation,

b. feeding output signals from the sensor to filter means having a transfer function equal to the reciprocal of the sensor/medium characteristic function, said sensor/medium characteristic function corresponding to a sensor/medium response function $f(t)$ represented by a sum of at least two exponential terms, each term having the form ae^{-Mt}, where a and M are constants and t is the time

parameter,

c. modulating said signals by said filter means, and





d. feeding output signals from said filter means to indication means.

3,878,725

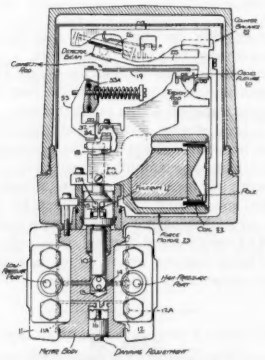
CROSS-FLEXURE PIVOT FOR ELECTRONIC DIFFERENTIAL PRESSURE TRANSMITTER

Max Gaertner, Warminster, Pa., assignor to Fischer and Porter Co., Warminster, Pa.

Filed Sept. 25, 1973, Ser. No. 400,687

Int. Cl. G011 9/12

U.S. Cl. 73—398 C **6 Claims**



6. A differential-pressure electronic transmitter comprising:

A. a pivoted force bar,

B. means to apply an input force to the lower end of the force bar to effect a displacement thereof as a function of the difference between a low pressure fluidic input and a high pressure fluidic input,

C. a cross-flexure pivot including a stationary platform piece having an L-shaped formation defining a horizontal ledge and a vertical ledge whose junction is linear, a movable piece having a reverse L-formation defining a vertical ledge and a horizontal ledge whose junction is linear and parallel to the linear junction of the platform piece, two sets of intersecting bendable wires, the wires of one set interconnecting the horizontal ledges of the pieces and the wires of the other set interconnecting the vertical ledges of the pieces to create a pivot axis extending through the points of intersection, and a torsion rod in parallel relation to said pivot axis, said rod being attached at one end to said movable piece and at the other end to said stationary piece, said rod being twistable to permit swinging motion of said movable piece but acting as a column to prevent axial displacement thereof.

D. a force motor having a motor coil,

E. a motor arm coupling the said motor coil to one of the ledges of the wing piece,

F. a connecting rod and lever system coupling the upper end of the motor arm to the upper end of said force bar, and

G. means to detect displacement of said force bar and to apply a feedback signal to said force motor as a function of said displacement.

3,878,726

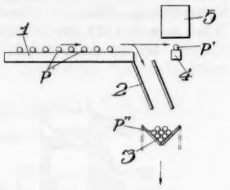
DEVICE FOR SAMPLING INSPECTION

Touru Hamatani, No. 2-5-45 Inage, Chiba, Japan

Continuation-in-part of Ser. No. 50,744, June 26, 1970, abandoned. This application Jan. 9, 1973, Ser. No. 322,125

Int. Cl. G01n 1/00

U.S. Cl. 73—421 R **9 Claims**



1. A device for sampling inspection, comprising: conveyor means, a testing mechanism provided with sample holding means and means to measure a property of a sample, said sample holding means being provided with a sample receiving member adapted for reciprocating up and down motion, an eccentric cam attached to said member to cause said up and down movement, and means for expelling the sample from said receiving member, said receiving member being aligned to receive a sample at the bottom of the cycle and positioned to permit measurement of a property by said means to measure at the top of the cycle, and means adapted to be operated in association with said conveyor means for alternatively discharging a group of products from said conveyor means and feeding a sample of said product to said sample holding means; and a pool member positioned to accept the products discharged from said conveyor means and hold the products thereon until the property of the sample is determined to be satisfactory.

3,878,727

FLUID NETWORK FOR AND METHOD OF CONTROLLING ZERO-FLOW THROUGH A MEASURING CELL

Richard H. Burns, Webster, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Oct. 19, 1973, Ser. No. 408,211

Int. Cl. G01n 1/20

U.S. Cl. 73—422 TC **4 Claims**

4. A closed fluid network for providing zero fluid flow in a flow-through measuring cell, comprising:

a source of fluid;

a control valve in communication with the source of fluid to control the flow of the fluid from the source;

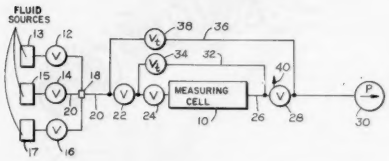
a first and a second inlet valve connected together in communication with the fluid in the source through the control valve;

a flow-through fluid measuring cell connected to the second inlet valve for receiving fluid passing serially through the

control valve, the first inlet valve and the second inlet valve;

an outlet valve in communication with the cell, with that side of said outlet valve next to the cell being vented to the atmosphere;

first bleeder bypass means in communication with both the first and second inlet valves on a first end and the outlet valve next to the cell on a second end for providing a fluid



path to equalize the fluid pressure at the input and output ends of the flow-through cell; and

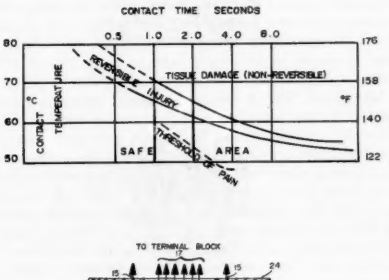
second bleeder bypass means in communication with both the control valve and the first inlet valve on one end and the outlet valve opposite the cell on a second end for providing a fluid path for stabilizing fluid flow in a fluid path bypassing the flow-through cell when zero fluid flow is being maintained within the flow-through cell.

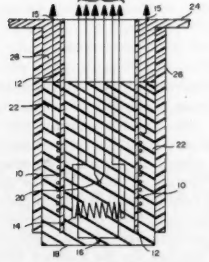
3,878,728

THERMESTHESIOMETER

Louis A. Marzetta, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Oct. 18, 1973, Ser. No. 407,532
Int. Cl. G01n *25/00*
U.S. Cl. 73—432 SD **8 Claims**





1. A thermesthesiometer for measuring the temperature that would exist at the basal layer of the skin of a human finger or the like if the finger were to contact a potentially hazardous hot surface, comprising:

a finger-like probe of elastomeric material having a thermal inertia substantially equal to that of human finger tissue, said probe having a face for contacting said hot surface;

temperature maintaining means disposed within said finger-like probe for maintaining the bulk of said elastomeric material at a temperature substantially equal to that of human finger tissue;

temperature measuring means for measuring the temperature of said elastomeric probe beneath said face at a distance substantially equal to that of the basal layer of human finger skin;

timing signal generating means responsive to an output from said temperature measuring means which slightly exceeds the output corresponding to said human finger tissue temperature for generating a timing signal of preselected duration; and

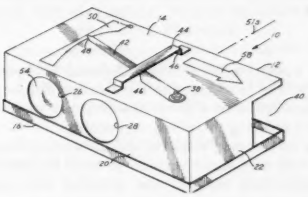
temperature displaying means responsive to the termination of said timing signal for fixedly displaying the then-existing temperature output from said temperature measuring means.

3,878,729

INSTRUMENT AND METHOD FOR MEASURING AND INDICATING SPEED OF A MOVING, SOUND-EMITTING OBJECT

Robert S. Spalding, 550 Lamar Ct., Denver, Colo. 80226

Filed June 15, 1973, Ser. No. 370,397
Int. Cl. G01p *3/36, 11/00*
U.S. Cl. 73—488 **10 Claims**



8. A device for indicating the speed of a distant moving and sound-emitting object comprising:

a box having a front and rear wall, the front wall being adapted to be pointed along a first reference line in the direction from which the sound is received,

a first mirror pivotally mounted in the box,

a second mirror fixedly mounted in the box and positioned relative to said first mirror so that a user's line of sight can be reflected from the second mirror to the first mirror,

a first viewing aperture in said rear wall of the box aligned in a front-to-rear direction with said second mirror,

a viewing window in the front wall of the box aligned in a front-to-rear direction with said first mirror so that the user's line-of-sight can be reflected by the first and second mirrors through the viewing window and along a second reference line toward the moving object,

a reference pin fixedly mounted in said box in spaced relation from said second mirror,

a second viewing aperture in the rear wall of the box aligned in a front-to-rear direction with said reference line and spaced from said second viewing aperture such that the user can look through the first viewing aperture with one eye and the second viewing aperture with the other eye when using the device so that said object seen with said one eye via said first and second mirrors can be aligned visually with said reference pin to accurately define the angle included between the first mirror and a reference line normal to the front wall of the box when the reference line is pointed in the direction from which the sound is emitted,

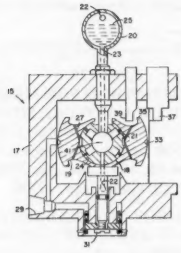
a calibrated scale on an exterior face of the box having indicia which is proportional to the tangent of the angle included between said first and second reference lines, said indicia relating to the speed of the object, and

an indicator arm operatively connected to said first mirror for unitary pivotal movement therewith relative to the box and positioned to move along said calibrated scale to indicate on the scale the speed of the moving object.

3,878,730
VENTED ROTOR GYROSCOPE

William W. Stripling, and Aubrey Rodgers, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1974, Ser. No. 430,960
Int. Cl. G01c *19/26*
U.S. Cl. 74—5.7 **1 Claim**



1. In a transportation machine disposed for operation in a linear path, and provided with a gyroscope disposed for high initial acceleration to a predetermined rate of rotation and subsequent coasting therefrom comprising:

a stator and a rotor with a spherical bearing therebetween and with said stator secured in axial relation with said transportation machine and provided with passages to supply compressed air to said bearing; and

a reservoir in communication with said passages, a fluid, and a membrane disposed to retain said fluid in said reservoir and to rupture for fluid displacement of the compressed air in said bearing responsive to a predetermined value of the initial acceleration;

said rotor including vents communicating with said bearing for escape of said fluid to minimize viscous drag during the coasting.

3,878,731
SHAFT-OPERATING MEANS

Albert William Huegli, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Division of Ser. No. 213,986, Dec. 30, 1971, Pat. No. 3,370,260. This application Dec. 17, 1973, Ser. No. 425,671
Int. Cl. G01p *13/00*; **F16h** *35/18*
U.S. Cl. 74—10.8 **7 Claims**

1. An actuating and indicating device for actuating a shaft member of an apparatus and for indicating the amount of actuation thereof comprising:

panel-mounting means for mounting said device on a panel member;

bearing means provided by said panel-mounting means;

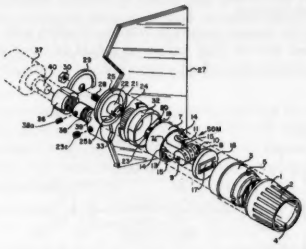
knob means having first gear means and second gear means;

mounting means provided by said knob means and said bearing means rotatably mounting said knob means on said bearing means;

indicia means disposed within said knob means;

third gear means provided by said indicia means and being in operative engagement with said second gear means for operating said indicia means upon rotational movement of said knob means; and

adaptor means mounted within said panel-mounting means adapted to be secured on the shaft member and having fourth gear means in operative engagement with said first

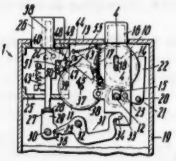


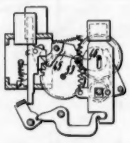
gear means for driving the shaft member upon rotational movement of said knob means.

3,878,732
PRESETTABLE NUMBER DEVICE

Fritz Kübler, Schwenningen, Germany, assignor to Fritz Kübler Zahlerfabrik, Schwenningen, Germany

Filed Oct. 15, 1973, Ser. No. 406,315
Claims priority, application Germany, Oct. 26, 1972, 2252615
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.29 **32 Claims**



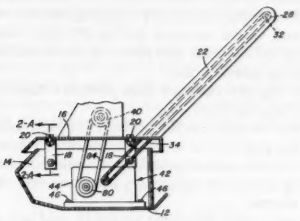


1. In a device having number wheels therein adapted for being preset; a frame, a plurality of coaxial number wheels in the frame and tens transfer gearing interconnecting the wheels, a heart shaped rotatable return cam fricitionally connected to each wheel, an arresting member for each cam normally spaced therefrom, and a key for each wheel biased toward retracted position and having means operable when the key is actuated away from retracted position to index the respective wheel a single digit, each arresting member adapted for actuation by the key for the number wheel pertaining to the respective cam, each arresting member being moved into cam arresting position on the first part of the stroke of the respective key awy from retracted position and the number wheel pertaining to the said key being indexed under correspondingly high torque during the final part of the stroke of the said key away from retracted position.

3,878,733
COMPACTOR WITH DIRECTIONAL CONTROL FOR ECCENTRIC WEIGHTS

Christian T. Tertinek, Canandaigua, N.Y., assignor to Stone Construction Equipment, Inc., Honeoye, N.Y.

Filed Jan. 15, 1974, Ser. No. 433,468
Int. Cl. F16h *33/00*
U.S. Cl. 74—61 **9 Claims**



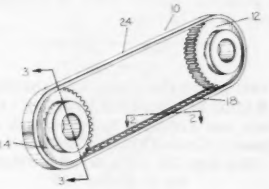
1. In combination, a mounting plate having front and rear ends, a base plate supported below and from said mounting plate for limited vibration of said base plate relative to said mounting plate in an upstanding plane extending longitudinally of said mounting plate, a rearwardly and upwardly inclined tubular handle supported from said opening downwardly through a rear portion of said mounting plate, rotary control means journaled from an upper portion of said handle, a rotary vibrator assembly supported from said base plate beneath said mounting plate and including a rotary input shaft portion, motor means supported from said mounting plate and including a rotary output shaft, means drivingly coupling said output shaft to said rotary input shaft portion, said vibrator assembly including a pair of side by side horizontal shafts journaled for rotation about an axis extending transversely of said base plate and driven from said input shaft portion for simultaneous and equal rotation, weight bodies mounted eccentrically on said shafts, meshed gear wheels mounted on said shafts for adjustable angular displacement relative thereto, weight body angular displacement adjusting means operatively connected between said shafts and gear wheels for angularly adjusting the latter relative to said shafts, said adjustment means including rotary operator means disposed below said mounting plate, and rotary motion transmitting means operatively connecting said rotary control means to said rotary operator for operation of the former in response to rotation of the latter, said rotary motion transmitting means extending downwardly through said handle, said rotary control means including a horizontal transverse rotary shaft portion journaled in the upper portion of said handle and having a first wheel member mounted thereon, said rotary operator means including a horizontal transverse rotary shaft portion having a second wheel member mounted thereon, said motion transmitting means comprising an elongated endless flexible drive member trained about said first and second wheel members.

3,878,734
FLEXIBLE POWER TRANSMISSION BELT

Maurice Irving Zeldman; Joseph Stephen Burke, and Richard Whittington Cadle, all of Pittsburgh, Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1972, Ser. No. 283,918
Int. Cl. F16h *7/00*
U.S. Cl. 74—229 **1 Claim**

1. A flexible power transmission belt in combination with transmitting power from a standard gear to at least one other standard gear comprising integrally formed flanged sides on one side thereof, enclosing therebetween a number of teeth adapted to mesh with the teeth of all of said gears, preformed wire rope enclosed within said formed flanged sides and positioned at the pitch diameter of the teeth of all of said gears as said belt engages and meshes with the teeth of each of said gears, the depth of said teeth of said flexible powered transmission belt is equal to or greater than the depth of said formed flanged sides, said teeth of said belt are reinforced

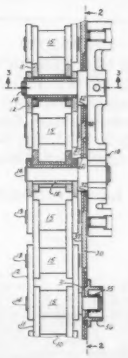


plastic, said preformed wire rope is joined together at each tooth by wire rope rung members each said ring member being enclosed within each said tooth; the side of the belt opposite to said teeth of said belt is a smooth imperforate continuous surface, the depth of the teeth of said flexible power transmission belt are equal to the depth of the formed flanged sides.

3,878,735
CONVEYING CHAIN PAIR FOR GRIPPER CARRIAGES ON SHEET-FED MACHINES, PARTICULARLY OFFSET PRINTING PRESSES

Friedrich Preuss, Sprendlingen, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG

Filed Sept. 17, 1973, Ser. No. 397,790
Claims priority, application Germany, Sept. 20, 1972, 2246061
Int. Cl. F16g *13/02*
U.S. Cl. 74—250 C **7 Claims**



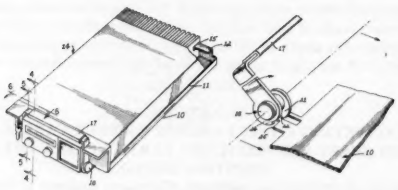
1. In a conveyor chain construction for use in a contaminated environment, the combination comprising a roller chain having parallel rows of flat links and having pins for pinning the links in overlapping relation with rollers interposed between them, the rollers being of lesser dimension so as to define a longitudinally extending groove on each side of the chain, parallel guide members enclosing the chain and extending longitudinally of the chain on both sides thereof, the guide members presenting edges registering with the grooves and engaging the rollers to provide a lubricated guideway for the chain, the guide members having flat closely spaced land surfaces straddling the chain and lying in a plane close to the chain which extends perpendicularly to the roller axes along one side of the chain, certain of the pins in a regularly recur-

ring pattern being extended axially beyond the land surfaces, and a series of covering plates secured to the extended pins, each covering plate having a pair of holes engaged by an adjacent pair of pins, the covering plates being in longitudinally overlapping relation and sufficiently wide as to bear upon both of the land surfaces so as to seal the chain and lubricated guideway against entry of foreign matter and against escape of the lubricant.

3,878,736
INSERTING AND REMOVING ARRANGEMENT FOR RADIO EQUIPMENT AND THE LIKE

John E. Main, and Arthur D. Saunders, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Sept. 26, 1973, Ser. No. 400,843
Int. Cl. G05g *5/06*
U.S. Cl. 74—527 **3 Claims**

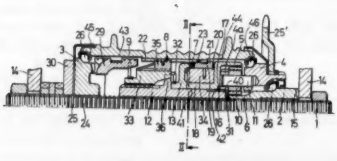


3. The improved arrangement of claim **2**, and further comprising means joining said first and second operating handles to cause said handles to operate together.

3,878,737
TWO-SPEED HUB FOR BICYCLES WITH BACK-PEDALLING BRAKE

Horst Schulz, Schweinfurt/Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt/Main, Germany

Filed July 2, 1973, Ser. No. 375,783
Claims priority, application Germany, July 4, 1972, 2232741
Int. Cl. F16h *3/44*
U.S. Cl. 74—750B **11 Claims**



1. A multiple-speed hub for a bicycle comprising:

a. a hub shaft having an axis,

1. an axial portion of said shaft carrying a plurality of axially uniformly spaced, annular ribs defining therebetween annular grooves, each rib having an outer face;

b. first and second bearing members mounted on said shaft in axially spaced relationship;

c. a driver member mounted on said first bearing member for rotation about said axis;

d. a hub sleeve having two axially terminal portions mounted on said driver member and on said second bearing member respectively for rotation about said axis;

e. planetary gearing in said hub sleeve including

1. a planet carrier connected to said driver member for joint rotation,

2. a ring gear rotatable about said axis,

3. a sun gear secured against rotation about said axis, and

4. a planet gear rotatable on said planet carrier in simultaneous meshing emgagement with said ring gear and said sun gear;

f. a sleeve member movably mounted on said shaft and connected to said planet carrier for joint rotation,

1. said outer faces rotatably engaging said sleeve member,

2. said sleeve member having an outer bearing face offset axially from said planet gear toward said second bearing member, and

3. said ring gear having a neck portion rotatably engaging said bearing face;

g. first and second coupling means drivingly connected to said ring gear and to said sleeve member respectively for joint rotation and engageable with said hub sleeve;

h. shifting means for selectively actuating one of said coupling means;

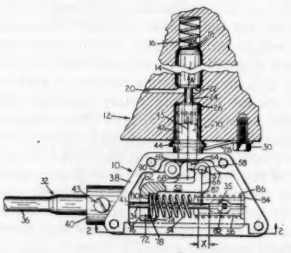
i. cooperating first abutment means on said hub sleeve and on said ring gear securing said ring gear against axial movement toward said second bearing member; and

j. cooperating second abutment means on said ring gear and on said sleeve member securing said sleeve member against axial movement toward said second bearing member.

3,878,738
ACTUATOR FOR A TRANSMISSION MODULATOR VALVE

Alan H. Brooke, Hudson, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1974, Ser. No. 457,911
Int. Cl. B60k
U.S. Cl. 74—854 **14 Claims**



1. A mechanical actuator for a modulator valve of a transmission, said actuator being capable of responding to the linear travel of an operating member associated with the throttle which said linear travel corresponds to movement of said throttle, said actuator capable of providing an output force having a magnitude which varies in a predetermined manner according to the position of the operating member within at least a portion of the total of said linear travel of said operating member during said movement of said throttle, said output force capable of providing at least a portion of an input force for movement of said modulator valve against modulator valve biasing, the maximum length of said movement of said modulator valve by said input force being substantially less than the length of said portion of said total of said linear travel of said operating member, said actuator comprising:

a housing capable of being mounted in a fixed relationship to said transmission and of receiving therein said operating member;

a lever pivotally mounted within said housing and having an input portion with a first moment arm and an output portion with a second moment arm;

said output portion being aligned at said second moment arm with said modulator valve when said housing is mounted at said transmission;

means between said input portion of said lever and said operating member located within said housing for converting said position of said operating member within said portion of said total of said travel of said operating member to a normal signal force on said input portion at said first moment arm; and

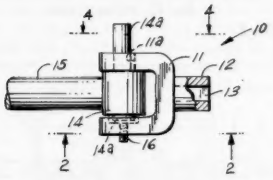
said normal signal force on said input portion causing said output force to be applied to said modulator valve by said output portion with said normal signal force and said output force being directly proportional at a ratio of the length of said second moment arm and said first moment arm.

3,878,739

TIE-ROD END TOOL

Delmar W. Crandell, 3115 E. 31st St., Minneapolis, Minn. 55408

Filed Jan. 7, 1974, Ser. No. 435,857
Int. Cl. B25b *13/02, 13/48*
U.S. Cl. 81—119 **3 Claims**



1. Apparatus for the removal of a tie-rod comprising in combination: a U-shaped yoke member including first and second legs, the first leg of the yoke member including a slotted opening allowing the insertion therein of a pin of the tie-rod end; means carried by the yoke member for the attachment of a power wrench thereto to allow rotating of the yoke member; and a slack adjustment screw carried by the second leg of the yoke member, wherein the end of a tie-rod can be inserted in the apparatus such that the pin of the tie-rod end is received within the slotted opening of the first leg and the side opposite the pin of the tie-rod end is placed adjacent the slack adjustment screw such that the slack adjustment screw can be tightened against the tie-rod end thereby securely grasping the tie-rod within the yoke member.

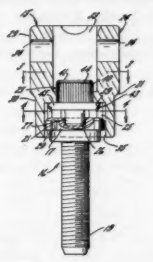
3,878,740

WRENCH SOCKET ASSEMBLY

Charles E. Gutshall, Rockford, Ill., assignor to Elco Industries, Inc., Rockford, Ill.

Filed Nov. 23, 1973, Ser. No. 418,601
Int. Cl. B25b *13/06, 13/48*
U.S. Cl. 81—121 R **10 Claims**

1. A wrench socket assembly in combination with a threaded fastening member adapted to be received within and turned by said assembly, said assembly comprising a body having a central axis, a socket formed in said body along said axis, a side wall defining the periphery of said socket within said body and extending in a generally axial direction, an end wall of said socket formed integrally with said side wall and extending in a generally radial direction from said side wall toward the axis of said body, said side wall comprising a series of alternating protrusions and recesses respectively extending toward and away from the axis of said body in a generally radial direction so as to mate with said fastening member with a driving fit, a hole formed in said end wall, an insert member mounted within said hole and extending into said socket, means connecting said insert member with said fastening member to keep said body from wobbling on said fastening member while still permitting relative rotation between said



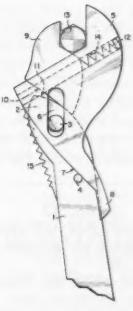
insert member and said fastening member, said means including an opening of predetermined width formed in one of said members, and a projection having a width slightly smaller than said predetermined width and being formed on the other one of said members so as to mate with said opening when said fastening member is inserted into said socket.

3,878,741

RATCHET ACTION WRENCH

Marshall K. Wilson, Wabash, Ind., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 8, 1973, Ser. No. 414,154
Int. Cl. B25b *13/18*
U.S. Cl. 81—128 **2 Claims**



1. A ratchet action wrench, comprising

a handle having a rounded cam-shaped end and a pivot pin projecting therefrom in the area of the cam-shaped end and a second pin spaced from the pivot pin and projecting therefrom;

a head having a slot formed therein and pivotally mounted on the pivot pin via the slot and having an inclined edge abutting the second pin and an arm extending from said edge for applying manual pressure, the pivot pin being accommodated in the slot and movable therein;

a jaw member having an inclined edge abutting the edge of the cam-shaped end of the handle;

first compression spring means coupled between the head and the jaw member for urging the jaw member to separate from the head to fit around a nut; and

second compression spring means coupled between the head and the handle for urging the head to abut the jaw member to clamp a nut.

3,878,742

NUMERICALLY CONTROLLED LATHES

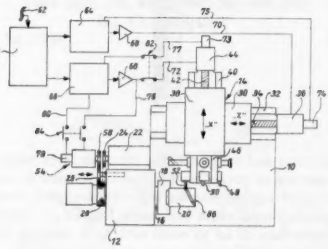
Heinrich Lahm, Esslingen-Sirnau, Germany, assignor to Index-Werke KG Hahn & Tessky, Esslingen, Germany

Filed Nov. 29, 1973, Ser. No. 420,146

Claims priority, application Germany, Dec. 4, 1972, 2259372

Int. Cl. B23b *3/00, 1/00*

U.S. Cl. 82—1 C **9 Claims**



1. A numerically controlled lathe having a rotatable spindle for holding a workpiece, a carriage for holding the tool in operation with said spindle, said carriage comprising a compound slide having a longitudinal slide member and a cross slide member movable respectively along axes parallel and transverse to the axis of said spindle, means for independently driving each of said slide members, and a numerical control system providing a predetermined program for each axis to control the means for respectively driving said slide members, drive means for rotating said spindle, means for diverting the predetermined program for controlling the means for driving one of said slide members to said means for driving said spindle to control said means for driving said spindle in accordance with said predetermined program, said spindle rotation being thereby controlled by the predetermined program for driving said carriage in one axis in synchronism with the movement of the carriage in the other axis while said carriage is held stationary against movement in the one axis.

3,878,743

CAN SHEARING APPARATUS

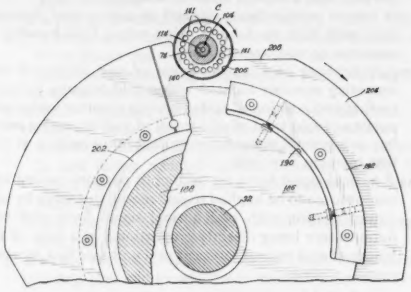
Julius J. Melind, Des Plaines, Ill., assignor to H. L. Fisher Mfg. Co., Inc., Des Plaines, Ill.

Filed Dec. 17, 1973, Ser. No. 425,559

Int. Cl. B23b *3/04*

U.S. Cl. 82—54 **18 Claims**

1. Can shearing apparatus comprising main frame means, a headstock assembly supported by said main frame means and rotatable about a horizontal axis, at least one horizontal spindle unit rotatably mounted in said headstock assembly on an axis radially spaced from the rotatable axis of the latter, said spindle unit including a tubular spindle, an annular cutter element secured on one end of said tubular spindle, a plunger rod axially slidable in said tubular spindle and having a plunger head adjacent said one end of said tubular spindle, a tailstock assembly supported by said main frame means and rotatable coaxially of said headstock assembly for supporting a can with the open end thereof disposed over said annular cutter element, means for moving said plunger head axially within a can, a stationary cutter element supported by said main frame means, means for conjointly rotating said headstock and tailstock assemblies, and said spindle unit being rotatable on its own axis while said headstock and tailstock are rotating whereby said annular and stationary cutter elements



cooperate for shearing an end portion from the open end of a can disposed over said annular cutter element.

3,878,744

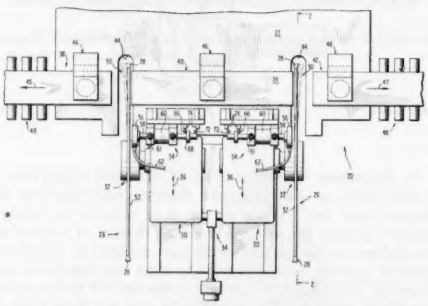
CUTTING METHOD AND APPARATUS WITH SAW BLADE DEFLECTION

Gustav Friedrich Luxnat, Davis, Ill., assignor to Metalcut International Incorporated, Rockford, Ill.

Filed May 8, 1974, Ser. No. 468,083

Int. Cl. B23d *45/10*

U.S. Cl. 83—27 **23 Claims**



1. A method of severing a workpiece with a rotatable saw blade, the method comprising:

effecting relative traversing movement between the rotating saw blade and the workpiece to sever the workpiece into two portions,

moving one of the workpiece portions away from the location of the cut,

deflecting the rotating saw blade away from the location of other workpiece portion, and

relatively retracting the deflected rotating saw blade away from the location of the cut toward its initial position.

3,878,745

MACHINE OPERATION DETECTION APPARATUS

Louis J. Handziak; John Qualey; Patrick M. Lynch, and Donald C. Wollenschlager, all of Milwaukee, Wis., assignors to Joseph Schlitz Brewing Company, Milwaukee, Wis.

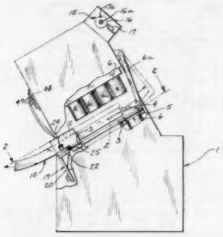
Filed Apr. 6, 1973, Ser. No. 348,662

Int. Cl. B26d *5/00, 7/24*

U.S. Cl. 83—61 **19 Claims**

3. In a forming apparatus having means for cyclically forming individual parts and automatically discharging of said parts along a predetermined path from the forming apparatus, detection means for establishing an energy beam across said path and interrupted by movement of a formed part along said path

to form a detection signal, cycle means generating an operational signal per forming cycle of said apparatus, signal processing and combining means activated by said operational signal and responsive to said detection signal to continuously monitor the operation of the machine on a per cycle basis, said processing and combining means includes a memory unit having a set input and a reset input, said detection means and said cycle means being connected one each to the set input and reset input to cyclically set and reset the memory unit



during each complete cycle, a first logic circuit means connected to the memory unit to produce a signal in accordance with the cycling of the memory unit, and a second logic circuit means having a plurality of inputs including first and second inputs connected respectively to the cycle means, and to the memory unit said second logic circuit having a third input, complementary logic circuit connected to said third input and having an input connected to said cycle means, and a jam fault responsive means connected to the output of the second logic circuit.

3,878,746

BURLESS BLANKING MACHINE AND PROCESS

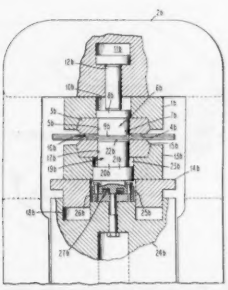
Werter Carmeli, Milan, Italy, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,626

Claims priority, application Italy, Dec. 22, 1972, 33436/72

Int. Cl. B26f *1/02*

U.S. Cl. 83—126 **4 Claims**



1. A blanking press comprising:

a frame;

a die, having a die aperture, said die being rigidly secured to said frame;

a stripper disposed within said die aperture and slidably guided by said die aperture, said stripper projecting from the outer surface of said die during one predetermined period of the machine cycle;

a clamping plate opposed to said outer surface of said die for clamping the material to be blanked against said outer surface of said die, said clamping plate being provided with an aperture, said aperture having essentially the same section of and being essentially aligned with said die aperture;

a punch disposed within said aperture of said clamping plate, said punch being slidably guided by said aperture; a drive slide;

means for connecting said punch and said drive slide, said means being able to maintain the work surface of said punch substantially flush with the work surface of said clamping plate during another predetermined period of the machine cycle, said means being further able to allow said punch to recede into said aperture of said clamping plate a predetermined distance after which said means supply a direct transmission of the motion of said drive slide to said punch;

means for actuating said stripper;

means for actuating said clamping plate; and

means for actuating said drive slide.

3,878,747

CIRCULAR SAW BLADE

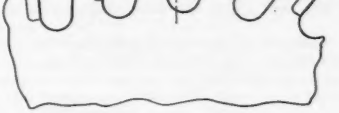
Lars Soderstrom, Hovas, Sweden, assignor to Centro-Metalcut AB, Gothenburg, Sweden

Filed May 21, 1974, Ser. No. 471,993

Claims priority, application Sweden, May 28, 1973, 7307499

Int. Cl. B23d *45/00*; **B27b** *33/08*

U.S. Cl. 83—835 **2 Claims**



1. A circular saw blade for cross-cutting metal, comprising teeth including a top face with one or more top face chamfers, a primary clearance and side clearances on both sides of the teeth, in such a manner, that lines in the side clearances directed to the axis of rotation form with the central plane of the saw blade an acute angle directed to the centre of rotation, characterized in that lines in the side clearances perpendicular to the first mentioned lines are in parallel with the central plane.

3,878,748

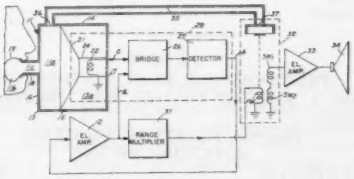
ORAL CAVITY CONTROLLED ELECTRONIC MUSICAL INSTRUMENT

Larry A. Spence, 720 Fairlane, Apt. D., Longmont, Colo. 80501

Filed Mar. 21, 1974, Ser. No. 453,330

Int. Cl. G10h *3/00*

U.S. Cl. 84—1.05 **26 Claims**



1. In a method of electrically producing musical sound, the steps of:

confining a mass of air in a first cavity having a constant configuration communicating with external surrounding air through a small opening to form a cavity resonator,

placing the lips of a player over the opening and setting the size of the player's oral cavity to establish a selected resonant frequency for the combined first cavity and oral cavity,

vibrating the confined mass of air in the first cavity to generate sound energy that is transmitted back and forth through the small opening between the first cavity and the oral cavity,

monitoring the sound energy directly within said first cavity to produce electric oscillations corresponding to the monitored sound energy and substantially in phase with the vibrations of the mass of air in the first cavity and at the same time transforming amplified electric oscillations to an oscillatory physical force capable of sustaining the sound energy in the first cavity, and

amplifying the monitored electric oscillations prior to said transformation into electric oscillations.

3,878,749

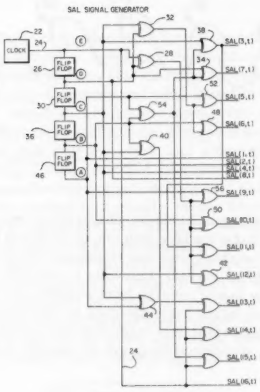
WALSH FUNCTION TONE GENERATOR AND SYSTEM

Robert P. Woron, Southampton, Pa., assignor to Allen Organ Company, Macungie, Pa.

Filed Dec. 12, 1972, Ser. No. 314,480

Int. Cl. G10h *3/00*

U.S. Cl. 84—1.01 **20 Claims**



1. Apparatus for producing a musical tone, comprising:

clock means for generating a clock signal at a frequency which is a predetermined number times the fundamental frequency of the musical tone to be generated;

means for receiving a clock signal and for generating a plurality of digital Walsh function signals; and

means for summing predetermined ones of the plurality of digital Walsh function signals to produce a musical tone output.

3,878,750

PROGRAMMABLE MUSIC SYNTHESIZER

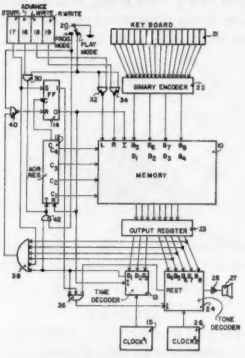
Charles A. Kapps, 27 University Mews, Philadelphia, Pa. 19104

Filed Nov. 21, 1973, Ser. No. 418,031

Int. Cl. G10h *1/00, 5/00*

U.S. Cl. 84—1.01 **6 Claims**

1. A music synthesizer comprising means to generate a digital representation corresponding to each one of a sequence of musical notes, said last named means further comprising first means to define the frequency of each note and second means to define the time duration thereof, electronic means for separately storing each of said digital representations comprising said sequence of musical notes, and means



for sequentially recovering each of said digital representations comprising said sequence of musical notes from said electronic storage means, and means for generating from said digital representations audio signals corresponding to said sequence of musical notes.

3,878,751

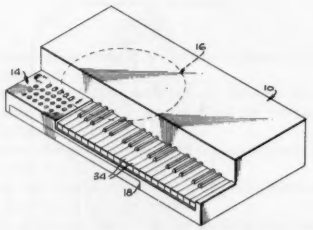
ENDLESS RECORD AUDIO SIGNAL GENERATOR AND MEANS FOR PLAYING RECORD

Michael E. Golden; Marshall B. Pearlman, and John W. Ryan, all of Los Angeles, Calif., assignors to Opsonar Organ Corporation, Bronx, N.Y.

Filed Nov. 30, 1970, Ser. No. 93,763

Int. Cl. G10h *3/04*

U.S. Cl. 84—1.28 **15 Claims**



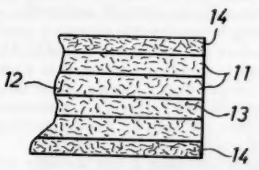
1. Apparatus for use in generating musical sounds comprising:

an endless record having a plurality of harmonizing tracks with re-entrant paths, each defining a pattern of musical notes in the same meter but based on a different musical chord so that at least some of the notes of each of said tracks have definite pitches, and each track lasting the same whole number of musical measures along the length of its track around the record, so that a change from a first track which is based on a first musical chord to a second track which is based on a second musical chord at the end of a pattern on the first track begins the playing of the second track at the beginning of the pattern thereon.

3,878,752
PIANO HAMMER FELT

Tsuguo Yamada, Hamamatsu, Japan

Continuation of Ser. No. 143,033, May 13, 1971, abandoned.
This application Feb. 20, 1973, Ser. No. 333,704
Claims priority, application Japan, Aug. 28, 1970, 45-85221; Aug. 28, 1970, 45-85222
Int. Cl. G10c *3/18*
U.S. Cl. 84—254 3 Claims

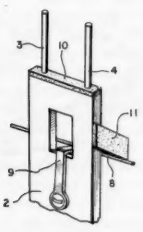


1. In a piano hammer having a hammer head and a hammer member fixedly attached thereto, the hammer member comprising multi-ply mutually superimposed inner layers each composed of wool fibres blended with thermoplastic resin fibres of relatively short lengths, and two outer layers respectively smaller in thickness than said inner layers and between which said inner layers are disposed, said outer layers being composed solely of wool fibres and covering both sides of said mutually superimposed inner layers, said blend of wool fibres and thermoplastic resin fibres being harder and possessing greater shape-retaining characteristics than said outer layers, said layers forming a hammering surface of the hammer member.

3,878,753
HARPSICHORD JACKS

Martin James Benson, 4107 N. Spaulding Ave., Berwyn, Ill. 60618

Filed Apr. 19, 1972, Ser. No. 245,426
Int. Cl. G10c *1/06*
U.S. Cl. 84—258 2 Claims

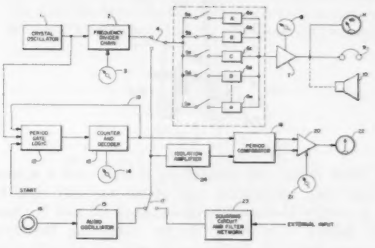


1. A string plucking mechanism for a harpsichord having a frame which supports a keyboard and a plurality of strings, the plucking mechanism comprising a jack having an opening therein and being mounted in the frame, means for guiding the jack for up and down movement in response to the actuation of a key, and plectrum means disposed in said opening for plucking a string, wherein said plectrum means comprises an L-shaped, flexible member having a first leg extending through said opening from the side of the jack nearest the string to the opposite side of the jack, and a second leg extending along the said opposite side of the jack and having a first end attached to said first leg and a second end secured to said opposite side of the jack.

3,878,754
MUSICAL TEACHING AND TUNING APPARATUS

Phillip R. Barnum, 8031 East Willetta, Mesa, Ariz. 85207

Continuation-in-part of Ser. No. 255,674, May 22, 1972, abandoned. This application Sept. 18, 1973, Ser. No. 398,443
Int. Cl. G10g *7/02*; G09b *15/00*
U.S. Cl. 84—454 4 Claims

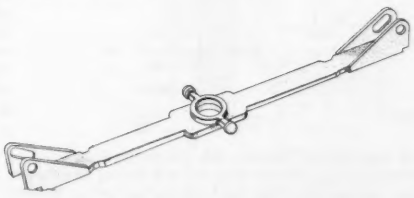


1. Musical teaching and tuning apparatus comprising:
a. a crystal controlled oscillator;
b. a digital frequency divider coupled to the output of said oscillator for dividing the frequency thereof;
c. means for selecting the ratio by which said frequency divider divides the output signal from said crystal oscillator;
d. a plurality of voicing circuits;
e. means for coupling at least one of said voicing circuits to the output of said frequency divider, output terminals of coupled ones of said voicing circuits being common;
f. an amplifier connected to the output from said voicing circuits;
g. means for controlling the gain of said amplifier;
h. an acoustic transducer driven by said amplifer for reproducing an audio tone derived from said crystal oscillator by said frequency divider and shaped by at least one of said voicing circuits;
i. a tunable audio oscillator; and
j. mode selector switch means for selecting between the output from said frequency divider and the output from said tunable audio oscillator as the input to said voicing circuits.

3,878,755
ONE-PIECE SNAP-TOGETHER TOGGLE HEAD

Chase C. Coffey, Dallas, Tex., assignor to The Firm of Dock & Dock, Arlington, Va., a part interest

Filed May 22, 1974, Ser. No. 472,096
Int. Cl. F16b *13/04*
U.S. Cl. 85—3 R 10 Claims

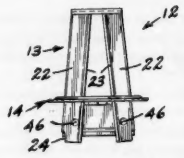


1. In a unitary structure for a toggle head, the combination of a central member having a bore therethrough, and at the ends of one axis of said central member, oppositely directed rod-like rib members each terminating in a wing, and at each end of the perpendicular axis of said central member an anchoring trunnion for the retention of said wings upon bending of said rib members to place the outermost portions of said wings in juxtaposition with said central member.

3,878,756
NAIL HAVING WEDGE SPREADABLE LEGS

Robert L. Hallock, 7136 N.E. 8th Dr., Boca Raton, Fla. 33432

Filed Sept. 11, 1973, Ser. No. 396,286
Int. Cl. F16b *15/04*
U.S. Cl. 85—23 6 Claims

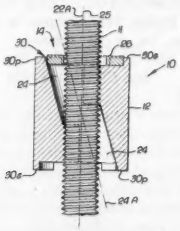


1. A sheet metal nail comprising a body and a separate head, said body including a pair of substantially rigid legs having generally U-shaped portions, each of said U-shaped portions having reinforcing flanges extending therefrom, bridge means integrally connected to one end of each of said legs and spacing said legs a predetermined distance apart, said head including an upper planar portion having spaced opposed T-shaped openings therein, wedge means connected to the under portion of said head and extending downwardly generally normal thereto, said wedge means having downwardly and outwardly inclined sides in alignment with portions of said openings, the sides of said wedge means being spaced apart a distance greater than the distance between said legs at said bridge means, said T-shaped openings slidably receiving the legs of said body, the U-shaped portions of said legs slidably receiving the side edges of said wedge means, and cooperating means on said wedge means and said legs for maintaining said head in spaced relationship to said bridge means until the nail is driven, whereby movement of said body through the openings of said head causes the wedge means to spread the legs apart.

3,878,757
AUTOMATIC LOCKING SLIDING NUT

William V. Puklus, Jr., 3200 Temple, Los Angeles, Calif. 90026

Filed Apr. 2, 1973, Ser. No. 346,784
Int. Cl. F16b *37/08*
U.S. Cl. 85—32 V 1 Claim



1. An automatically locking slide nut comprising:

a nut including a partially threaded hole having an enlarged open end in a generally flat load-bearing surface thereof, said partially threaded hole being defined by a threaded hole for axially receiving and mating with a threaded shaft when said nut is in a first position with an axis of said shaft substantially coaxial with a longitudinal axis of said threaded hole, and a nonthreaded hole intersecting said threaded hole at an acute angle for axially and slidably receiving said shaft when said nut is in a tilted and second position with said axis of said shaft substantially coaxial with a longitudinal axis of said nonthreaded hole, said axes of said threaded and nonthreaded holes intersecting at said acute angle; and

means for automatically locking said nut in said first position when said shaft is extending in a vertical direction, said automatic locking means including

an annular washer having a generally flat bottom surface perpendicular to the washer axis with the outer edge of said washer parallel to the washer axis, with said washer dimensioned for riding on said threaded shaft with a bottom engaging an upper corner portion of said nut to move upwardly and downwardly with said nut as said nut is moved vertically on said shaft in said tilted position and for dropping by gravity into a locking position on said bearing surface and against said threaded shaft when said nut is tilted to said first position, said washer having a thickness greater than a spacing of the threads on said shaft, a central hole larger by a predetermined radial clearance than said shaft for loosely receiving said shaft, and a substantially circular outer edge,

retaining means including a first shoulder extending upwardly from said bearing surface of said nut and having an inner arcuate surface parallel to the nut threaded hole axis for engaging said outer edge of said washer while a portion of an inner peripheral edge of said washer bears against said shaft to define a wedge between said shaft and said first shoulder to prohibit tilting of said nut from said first position, said inner arcuate surface of said first shoulder being formed on a radius substantially equal to an outer radius of said washer and extending from a center displaced by substantially said radical clearance from said

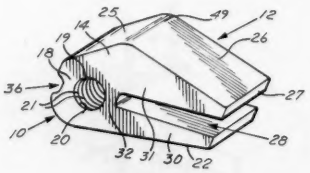
londitudinal axis of said threaded hole away from said arcuate surface, and

a second shoulder extending upwardly from said load-bearing surface opposite said first shoulder and including an arcuate surface formed on said radius forming said first mentioned arcuate surface.

3,878,758
RELEASABLE FASTENER

Samuel M. Reed, 2121 Routt, Lakewood, Colo. 80215

Filed Aug. 24, 1973, Ser. No. 391,453
Int. Cl. F16b *37/08*
U.S. Cl. 85—32 R 10 Claims



1. A female connector adapted to cooperate with a male member in fastening at least two parts together, said female connector comprising:

a body portion of generally polygonal configuration having external, straight-sided surface portions and an opening eccentrically located within the body extending in a direction parallel to the straight-sided surface portions so that the body portion defines a bearing region of increased thickness partially surrounding the opening,

extension ears formed in the bearing region of increased thickness, said extension ears formed by an open slot extending radially inwardly from one of the side surface portions toward the opening and terminating in an inner end adjacent to the surrounding edge of the opening, and the body portion being of least thickness between the inner end of the open slot and the surrounding edge of the

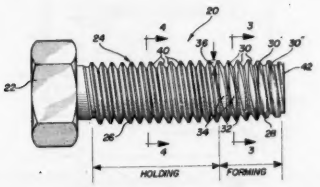
opening to define a weakened area of separation therebetween such that a prying force applied in the slot between the extension ears will cause separation therealong and circumferential expansion of said body portion away from connection to the male member.

3,878,759

BI-LOBULAR SELF-THREAD FORMING FASTENER

Raymond H. Carlson, Rockford, Ill., assignor to Textron Inc., Providence, R.I.

Filed Dec. 29, 1972, Ser. No. 319,511
Int. Cl. F16b *25/00, 33/02*
U.S. Cl. 85—46 **3 Claims**



1. A self-thread forming fastener for forming a female thread in a pilot aperture and effecting a locking action with said female thread, said fastener comprising: a driving head and a shank having a cold rolled threaded portion, said threaded portion of the shank including a thread-forming section, and a holding section, said thread-forming section having a plurality of helically disposed thread turns formed thereon, each said thread turn being defined by a generally circular root, a pair of helically disposed spaced flank surfaces which are disposed at an acute angle to each other converging in a radially outward direction, and a helically disposed crest surface, the height of said crest surface as measured from the root of said thread varying about the helix of each turn such that said flank surfaces and said crest surfaces define a pair of diametrically opposed arcuate lobe portions and a corresponding pair of diametrically opposed arcuate side portions for each thread turn, the height of the crest surface for said side portions being less than that at said lobe portions, said angle of convergence remaining substantially constant about said thread turn, and said side portions and lobe portions merging smoothly such that said flank surfaces and crest surfaces for each thread turn are continuous and uninterrupted, thereby providing each said thread turn with a truncated profile in section throughout the entire thread turn, and further providing said forming section with a bi-lobular thread formation capable of forming said female thread in the pilot aperture, and said holding section including a plurality of thread turns having a crest formation of a substantially circular configuration, the radial height of said thread turns on the holding section being at least as great as the maximum radial height of the lobe portions on the forming section, such that upon engagement of the thread turns on the holding section the female thread formed by the forming section flank-to-flank engagement will be obtained thereby establishing a locking action.

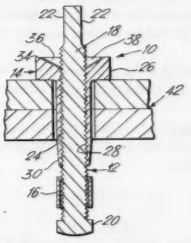
3,878,760

IMPROVED BLIND FASTENER

Harvey Philip Jeal, Stevenage; Raymond Dennis Lacey, Essendon, and Frederick Arthur Summerlin, St. Albans, all of England, assignors to Aerpat A.G., Zug, Switzerland

Filed Mar. 5, 1973, Ser. No. 338,338
Int. Cl. F16b *13/10, 39/02*
U.S. Cl. 85—77 **1 Claim**

1. A fastener comprising a bolt having an externally threaded shank, a bolt head at one end of the shank and diametrically opposed flats at the other end of the shank, a tubular body having a shank, an enlarged preformed head at one end of the shank and a threaded bore extending through the head and shank of the body, the head of the body having flat wrenching surfaces around its outer periphery and having a flat upper surface remote from the shank of the body, said upper surface having a plurality of circumferentially spaced recesses, each recess presenting two opposed abutment surfaces, each abutment surface intersecting and being contiguous with the bore and extending generally transversely of the head and longitudinally of the body, said bolt being threadedly



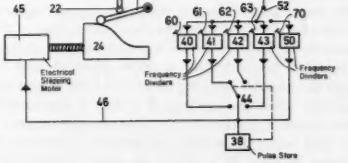
engaged in the bore of the body and projecting from the ends of the body, the head of the bolt being disposed adjacent the shank, an expandable tubular sleeve disposed on the shank of the bolt between the head of the bolt and the shank of the body, the arrangement being such that by rotation of the bolt relative to the body, the tubular sleeve may be expanded to form a blind head and that after formation of the blind head the shank of the bolt is adapted to be deformed into one or more of said recesses whereby further rotation of the bolt relative to the body may be prevented.

3,878,761

CURVE MILLING OR CURVE GRINDING MACHINES

Max Makowski, Gavelsberg, Germany, assignor to Maschinenfabrik Alfred Schmermund, Gevelsberg, Germany

Continuation of Ser. No. 231,102, March 2, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 417,325
Claims priority, application Germany, Mar. 3, 1971, 2110109
Int. Cl. B23q *35/08;* **G05b** *11/01*
U.S. Cl. 90—13.9 **7 Claims**



1. A shaping machine comprising, in combination:
a frame;
tool support means displaceably mounted on said frame;
workpiece support means rotatably mounted on said frame;
a master template displaceably mounted on said frame;
first displacement means to rotatably displace said workpiece support means;

second displacement means to displace said master template;

sensing means for sensing the profile of said master template;

coupling means inter-coupling said sensing means and said tool support means to impart displacement to said tool support means in response to displacement of said sensing means produced by displacement of said master template;

a repetitious signal generator coupled to said first displacement means to generate a predetermined number of repetitious signals on each predetermined angular displacement of said workpiece support means;

divider means to provide an output signal on the generation of each of a predeterminable number of said repetitious signals;

selectably operable setting means to set said divider means to determine the numerical value of said predeterminable number; and

applicator means to apply said output signals to said second displacement means to control the displacement of said master template.

3,878,762

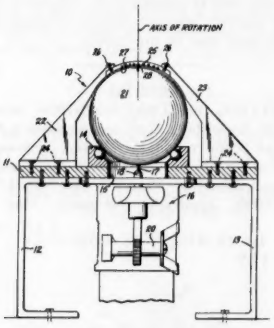
APPARATUS FOR MARKING SPHERICAL ARTICLES

Bernard Goldsmith, 4706 Kemper St., Rockville, Md. 20853

Filed June 5, 1974, Ser. No. 476,506

Int. Cl. B23c 1/16

U.S. Cl. 90—13.2 **3 Claims**



1. Marking apparatus for a spherical article comprising, an annular support element for rotatably supporting said spherical article for rotary movement about the center of the spherical article in all directions, marking means extending upwardly from beneath said support element and extending through the annular opening thereof to bear agains said spherical article when said spherical article is supported by said support element, stationary template support means extending above said support element for holding a template adjacent the upper surface of a spherical article supported by said support element, and a concave template removably carried by said template support means, the concave undersurface of said template having a design inscribed therein and a follower means carried by said spherical article to track through the design in the template when the spherical article is rotated to concurrently move the undersurface of the spherical article against said marking means to cause the same to mark the undersurface to the spherical article with a copy of the design on said template.

3,878,763

HYDRAULIC STEERING CONTROL SYSTEM

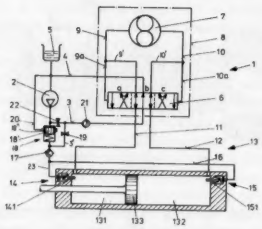
Armin Lang, Schwabisch Gmund-Bettringen, Germany, assignor to Zahnradfabrik Friedrichsafen AG, Friedrichshafen, Germany

Filed Oct. 4, 1973, Ser. No. 403,536

Claims priority, application Germany, Oct. 6, 1972, 2249181

Int. Cl. B62d 5/10; F15b 13/10

U.S. Cl. 91—391 R **11 Claims**



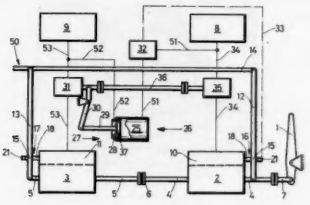
1. In a hydraulic steering control system of the type having elements comprising: a servopump for providing a pressure fluid, a manually operable metering pump, a multiway valve, a servomotor for operating a steering mechanism and including conduit means interconnecting said elements whereby manual operation of said metering pump effects pressurization and exhaust of said servomotor for power boost steering of a vehicle in addition to the pressurization effected by operation of said metering pump; the improvement which comprises a normally closed fluid bypass means connecting the inlet with the outlet of said servopump, and means responsive to a predetermined extend of operation of said servomotor to open said bypass means thereby rendering servopump outlet pressure inoperable on said servomotor so that only manual operation of said metering pump effects operating pressure for said servomotor;

wherein said bypass means comprises a pair of normally closed by pass valves; said servomotor comprising a double acting cylinder and a respective bypass valve communicating with a respective pressure chamber of said cylinder; means mechanically engagable with said bypass valves responsive to said predetermined extent of said servomotor in a respective direction to open one of said bypass valves; said bypass means further comprising a differential pressure operated valve communicating with the outlet of said servopump and having a movable valve element and having a flow connection connected to receive outlet pressure for opposite sides of said movable valve element to maintain an equilibrium position thereof, said flow connection being connected to said bypass valves downstream thereof, including a bypass connection to the inlet of said servopump for bypass of pressure fluid from outlet to inlet; said bypass connection being closed by said movable valve element when in equilibrium position, whereby, upon opening of a bypass valve in a pressure chamber being exhausted outlet pressure is released from a side of said movable valve element to said pressure chamber to unbalance pressure on said movable valve element to open said bypass connection for release of outlet pressure of said servopump to the inlet thereof.

3,878,764
DOUBLE-HYDRAULIC ACTUATOR

Hans Zech, Munich, Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Germany

Filed Feb. 22, 1972, Ser. No. 227,889
Claims priority, application Germany, Feb. 23, 1971, 2108545
Int. Cl. F15b *11/16, 13/06*
U.S. Cl. 91—411 **8 Claims**



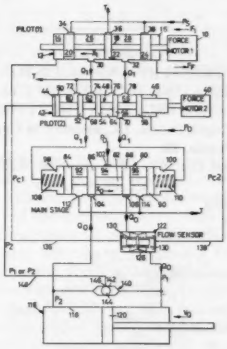
1. The combination in a redundant fluid actuator system of at least two separate and separably operated servomotors, each of said servomotors having a first piston rod mounted for reciprocal movement and a control valve for controlling the movement of said first piston rods, each of said control valves having a second piston rod thereon, means for mechanically coupling each of said first piston rods together, a common control member for controlling both of said servomotors, said common control member including means for mechanically coupling said common control member to each of said first piston rods, means for preventing the operation of one of said servomotors while permitting an operation of the other of said servomotors, and means for effecting a change-over in operation from one of said servomotors to the other of said servomotors, said change-over means including means defining a resilient connection between each of said second piston rods and said common control member and switching means for effecting said change-over responsive to flexing of said resilient connection due to a force being applied thereto by said common control member which exceeds a predetermined limit caused when one of said second piston rods becomes blocked due to a malfunctioning thereof, and resilient connection also being sufficiently rigid to effect a movement of said second piston rods by said common control member without a flexing of said resilient connection, said movement being permitted when said second piston rods are freely movable.

3,878,765
HYDRAULIC ACTUATOR CONTROLS

Ronald Bernard Walters, Wembley, and Donald Alexander Larner, Kingston-upon-Thames, both of England, assignors to Sperry Rand Limited, London, England

Division of Ser. No. 104,020, Jan. 5, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 337,107
Int. Cl. F15b *11/10, 13/042*
U.S. Cl. 91—433 **6 Claims**

1. In combination, a hydraulic actuator and device for optionally controlling the flow of fluid to or the pressure of fluid applied to said hydraulic actuator, said device comprising fluid pressure operated main control valve means for regulating the fluid flow to the actuator; said main control valve means having control pressure chamber means; first and second pilot valve means for controlling the main control valve, each said pilot valve means including inlet and outlet port means and spool means for regulating the fluid between the respective inlet and outlet port means; means connecting the outlet port means of one of said first and second pilot valve means to the inlet port means of the other of said pilot valve means and connecting the outlet port means of said other pilot valve means to said control pressure chamber means of said main control valve means to enable said main control valve means to be operated by said pilot valve means; first and second transducer means for producing a respective input force dependent on a respective electrical input signal and for applying such force to the respective spool means; first opposed piston means associated with said first pilot valve spool means; second piston means associated with said second pilot valve spool means; flow sensing means for producing a pressure difference dependent on the rate of fluid flow to the actuator; pressure sensing means for producing a feedback pressure dependent on the operating pressure of the actuator;

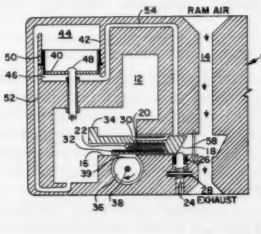


first feedback means for applying said pressure difference to said first opposed piston means to apply to said first pilot valve spool means a first feedback force opposed to the respective input force; and second feedback means for applying said feedback pressure to said second piston means to apply to said second pilot valve spool means a second feedback force opposed to the respective input force when the first transducer means is set to normally override the first feedback force, the first feedback force being effective when the second transducer means, is set to normally override the second feedback force.

3,878,766
GATING MECHANISM

Jerry C. Jerabek, Middletown, Conn., and Charles R. Hamilton, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 6, 1974, Ser. No. 467,173
Int. Cl. F15b *15/00;* **F16k** *31/44*
U.S. Cl. 91—469 **8 Claims**



1. Apparatus for causing movement of a mechanism by means of differential fluid pressure comprising:

a casing member having a duct for conduction of fluid therethrough and an elongated valve chamber intersecting said duct;

a gating valve member slidably fitted within said chamber for movement between an unactuated and an actuated position;

fluid motor means including fluid intake and exhaust passages and operating means movable in response to differential pressure between said intake and said exhaust passages;

first and second fluid passage means within said valve member arranged to be blocked by the walls of said valve chamber when said valve member is in the unactuated position and to provide communication between opposite ends of said duct and said intake and exhaust passages respectively when said valve member is in the actuated position.

3,878,767

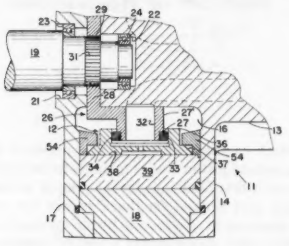
HIGH PRESSURE RADIAL PISTON FLUID TRANSLATING DEVICE AND CYLINDER CONSTRUCTION THEREFOR

William Karl Engel, Peoria, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Dec. 17, 1973, Ser. No. 425,192

Int. Cl. F01b *13/06*

U.S. Cl. 91—490 **8 Claims**



1. In a radial piston fluid translating device for operation with high internal fluid pressure, the combination comprising an annular rotor having at least one radially extending tubular piston, and a cylinder fitted on said piston for reciprocation relative thereto, said cylinder having a head end and having a skirt end with a bore into which said piston extends, at least a portion of said bore having a tapered configuration and being of progressively smaller internal diameter from said head end towards said skirt end

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3,878,768

HYDROSTATIC TRANSMISSION

Herwig Kress, Klocken 5, Oberzell ub. Ravensburgh, Germany

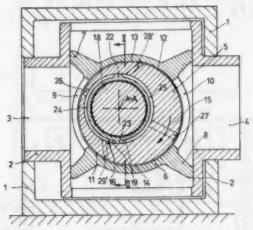
Filed July 24, 1972, Ser. No. 274,628

Claims priority, application Germany, July 24, 1971, 2137113

Int. Cl. F01b *21/00*

U.S. Cl. 92—2 **3 Claims**

1. In combination with a hydrostatic transmission for converting reciprocatory movement into rotary movement: a cylindrical first member having an axial recess therein and rotatable on an eccentric axis coinciding with the axis of said recess, a second member nonrotatably mounted on the eccentric axis with radial clearance defining an annular chamber between said first and second members, first axial rib means on said second member subdividing the annular chamber between said first and second members into first chambers, a third member having a bore receiving said first member with radial clearance defining an annular space between said first and third members and second axial rib means on said third member subdividing the annular space between said first and third members into second chambers, a stationary frame, a slide nonrotatable in the frame and reciprocable therein in opposite directions, means nonrotatably supporting said third member in said slide for reciprocal movement therein in a direction perpendicular to said opposite directions during rotation of said first member on said eccentric axis, said first and second rib means being disposed in planes which are



parallel to each other and to said axis, port means in opposite sides of said third member opening perpendicular to the planes of said first and second axial rib means for supplying pressure to said second chambers, and passage means in said first member connecting said second chambers to respective ones of said first chambers.

3,878,769

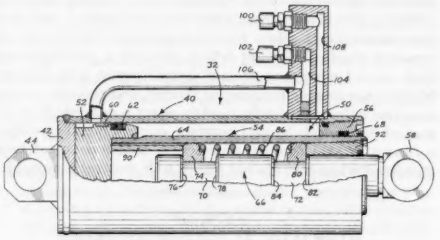
LOAD CLAMPING MECHANISM WITH LIMITED PLAY IN ARMS

Stanley F. Farmer, Gresham, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed June 7, 1973, Ser. No. 367,764

Int. Cl. F01b *31/00;* **F16j** *1/10*

U.S. Cl. 92—51 **2 Claims**



1. In a roll clamp including a swingable clamping arm structure which is pivotally mounted on a frame for swinging movement relative thereto thus to clamp onto a load,

a fluid-operated ram interposed between the frame and arm structure operable, on actuation, to produce adjusted swinging movement of the arm structure,

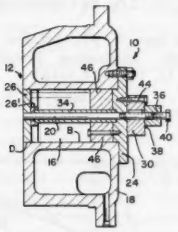
said ram including a cylinder and a piston rod assembly with the piston rod assembly extensible from the cylinder,

said piston rod assembly including a rod part telescopically received within a sleeve part, a pair of axially spaced spring seats encircling the rod part and mounted thereon for axial movement therealong, each spring seat being movable axially between a pair of limit positions defined on the rod part, a coiled compression spring interposed between the spring seats urging said seats apart to a position of maximum relative axial spacing, and means on the sleeve part positioning said spring seats with respect to the sleeve part with the seats in said position of maximum relative axial spacing.

3,878,770
CLEARANCE POCKET ASSEMBLY

Robert Ashton, Houston, Tex., assignor to Ingersoll-Rand Co., Woodcliff Lake, N.J.

Filed July 16, 1973, Ser. No. 379,498
Int. Cl. F01b 31/14
U.S. Cl. 92—60.5 4 Claims



1. Affixed volume clearance pocket assembly, for replaceable and operative installation thereof within the clearance passageway of a standard, outer head of the cylinder of a compressor or the like, for varying the volume of the cylinder, the latter having a prescribed volume, comprising:

valving means for insertion thereof into the clearance passageway, said valving means being selectively operative for opening and closing the clearance passageway to communication with the cylinder volume and for the admittance thereinto of fluid from the cylinder;

means coupled to said valving means for replaceably fastening the latter to the outer head; and

means coupled to said valving means for operating the latter; wherein

said valve operating means includes a shaft, and a rotatable element coupled to one end of said shaft for effecting rotation thereof;

said valving means is operatively engaged with the other end of the shaft;

said shaft has an axial length greater than that of said clearance passageway to effect a disposition of said rotatable element external of said clearance passageway;

said valving means comprises a gate valve, having a stationary element and a movable element;

said movable element is integral with said shaft;

said stationary element and said shaft are concentrically arranged and effect relative rotation therebetween;

said fastening means includes means for holding said stationary element at said innermost end of said passageway in a stationary disposition;

said holding means includes an elongate shaft sleeve, said stationary element is integrally fixed to one end of said sleeve, and a cover plate for replaceable fastening thereof across the outermost end of said passageway to the outer head;

said plate being integrally fixed to the other end of said sleeve, and having a borehole formed therein for a throughgoing penetration therof by said shaft;

said plate has a bearing surface;

said rotatable element has a bearing surface; and

said bearing surfaces together define an interface for relative rotation therebetween; further including

means for securing said rotatable element against rotation; and wherein

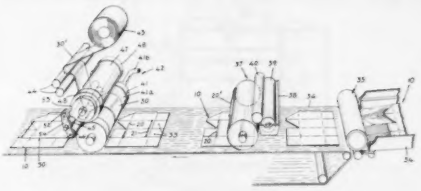
said rotatable element has an arcuate slot formed therethrough; and

said securing means comprises a headed fastener in penetration of said slot and threadedly secured to said plate.

3,878,771
MANUFACTURE OF PAPERBOARD CARTONS WITH LIQUID-PROOF LINERS

James A. Malcolm, 1 Ingleside Dr., Downsview, Ontario, Canada

Filed June 26, 1972, Ser. No. 265,964
Int. Cl. B31b 7/02
U.S. Cl. 93—36.01 14 Claims



1. A method of making knocked down containers from flat paperboard blanks each having four rectangular panels for forming sides of a carton, an edge flap on one of the panels for connecting sides of the carton, and end flaps protruding beyond the ends of the panels for closing the ends of such carton, comprising applying adhesive to successive blanks across a pair of adjoining panels, feeding the blanks successively past a rotating cylinder with end flaps of the blanks leading, feeding continuous tubular flexible bag material lengthwise to the rotating cylinder, providing sealed lines transversely of the tubular material at spaced apart intervals therealong, transversely severing the tubular material on the cylinder adjacent to but not coincident with said sealed lines to form successive separate bags each having an open end and one of said transverse sealed lines at the other end, delivering the successive bags around the cylinder and applying them by the cylinder flat against the adhesive on the successive blanks as the blanks pass the cylinder to secure the bags to the blanks, and coordinating the delivery of the bags to the blanks to ensure that each bag covers said pair of adjoining panels of a blank and covers and adheres to said adhesive and protrudes beyond the ends of said adjoining panels with the transverse sealed line of the bag spaced from the ends of said adjoining panels by a distance that is at least one half the length of a diagonal of one end of such carton.

3,878,772
REUSABLE COFFEE MAKER CONTAINER

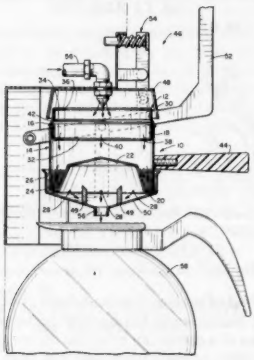
Robert A. Nordskog, Tarzana, Calif., assignor to Nordskog Company Inc., Van Nuys, Calif.

Filed Mar. 1, 1974, Ser. No. 447,286
Int. Cl. A47J 31/00
U.S. Cl. 99—295 9 Claims

1. In combination with a coffee maker having a base and a cover, said cover being movable relative to said base between an open position and a closed position, with said cover in said closed position a selected size of coffee container is adapted to be clamped in a liquid tight fitting manner between said cover and said base, said base including knives to penetrate the bottom surface of said coffee container, said cover including a perforation means to puncture the top side of said coffee container, means for supplying hot water through said perforation means into said coffee container with the resultant brewed coffee exiting adjacent said knives and into a catching container, the improvement comprising:

a reusable container to be usable in lieu of said coffee container, said reusable container having a top edge and a bottom edge, said top edge to contact said cover establishing a liquid leakage-free interconnection therebetween, an access opening formed about said top edge surrounding said perforation means, said bottom edge having a plurality of holes located in an annular arrange-

ment, a central recess formed within said bottom edge, said knives extending into said recess, whereby instant coffee crystals are to be placed within said reusable container and the hot water from said perforation means passes through said access opening and through the coffee crystals and out through said holes and into the catching container.

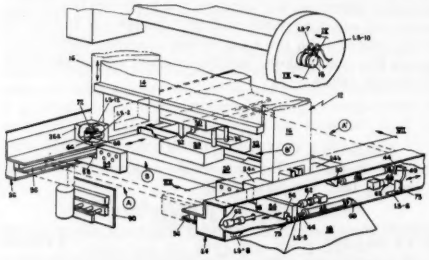


3,878,773

DOUBLE ACTING TRAVELING BOLSTER APPARATUS FOR PRESSES

Henry Smit, Kentwood, Mich., assignor to Leslie E. Tassell, Grand Rapids, Mich., a part interest

Filed Sept. 13, 1973, Ser. No. 396,843
Int. Cl. B30b *15/14*
U.S. Cl. 100—53 **18 Claims**



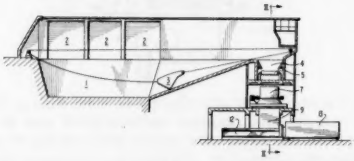
1. In a traveling bolster assembly for incorporation on power presses, said presses of the type having an upper movable ram, a lower press bed, and means for reciprocating said ram toward and away from said bed, the improvement comprising: two traveling bolsters adapted to be mounted on opposing sides of the center of the ram of such a press, each bolster extending substantially the full width of said ram on its respective side, means for mounting each of said bolsters on such a press for reciprocal movement only on its respective side of the center of said ram, each bolster moving between a loading position spaced generally horizontally from said ram wherein materials are loaded on the bolster and a working position in alignment with and beneath the ram wherein a working operation is performed on the supported material by the ram, said bolsters when simultaneously in their working positions being located on their respective sides of and adjacent to said center of said ram with no portions of said bolsters being in said loading positions; power means for simultaneously reciprocating each of said bolsters between said loading and working positions whereby at least a portion of both of said bolsters are simultaneously brought into registry and alignment with such a ram such that the ram may operate on the material loaded on both of said bolsters at the same time.

3,878,774

PLANT FOR COMPACTING AND CRUSHING DOMESTIC RUBBISH

Joseph Frossard, 10-12 rue du Commandant Marchand, Paris, France

Filed June 9, 1972, Ser. No. 261,468
Claims priority, application France, June 9, 1971, 71.21755; Sept. 16, 1971, 71.34162
Int. Cl. B30b *15/30*
U.S. Cl. 100—96 **2 Claims**



1. A plant for continuously compacting and crushing rubbish and placing the compacted rubbish in containers, comprising in combination,

a. a receiving and storing tank to receive and store the rubbish from rubbish transport means,

b. crushing means located adjacent said receiving tank,

c. a continuously operating bucket attached to a drag line to move the rubbish from said receiving and storing tank to a horizontal vibrating conveyor which feeds the rubbish into said crushing means,

d. a hopper having a single inlet and dual outlets located beneath said crushing means into which the rubbish passes after being crushed, said hopper having means to direct the rubbish to either of the dual outlets, and

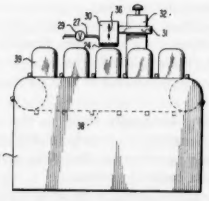
e. horizontal compacting means located beneath each outlet of said hopper to compact the crushed rubbish into a sealable container.

3,878,775

PRINTER WITH VACCUM DEVICE FOR HOLDING FILM FOR PRINTING

Leslie A. Fish, 180 Bowers Ave., Phillipsburg, N.J. 08865

Filed Nov. 29, 1972, Ser. No. 310,548
Int. Cl. B41f *17/00, 27/12, 1/32*
U.S. Cl. 101—41 **4 Claims**



1. Apparatus for printing on a section of flexible film, comprising:

a. a vacuum frame;

b. a conduit connecting the vacuum frame to a source of vacuum;

c. a printing head for printing on a supported section of a flexible film; and

d. means for mounting the vacuum frame to the printing head,

the vacuum frame comprising:

i. a structural member having laterally spaced bores formed therein, said bores being connected with said connecting conduit and along with said connecting conduit forming a vacuum manifold, said structural member defining at least one surface which includes at least two terminal points which lie in a plane coincident with the supported section of the flexible film; and

ii. laterally spaced ducts formed within said structural member, said ducts extending from and intersecting a respective one of said bores at one end thereof and extending to and opening into said plane at the other end thereof, the lateral spacing of said ducts being different from the lateral spacing of said bores, said ducts each including a channel for the reception therein of a segment of the flexible film, the segments being drawn into their respective channels by the vacuum communicated through said bores and ducts and applied against the segments such that a drawing force is applied against the segments and a corresponding tension force is applied to the flexible film between the segments as a result of the different lateral spacing between said ducts, said tension force being applied in a direction substantially transverse to the direction of the drawing force, said drawing force and corresponding tension force serving to support the flexible film against said structural member and define thereby the supported section of the flexible film. structural member defining at least one surface which includes at least two terminal points which lie in a plane coincident with the supported section of the flexible film; and

ii. laterally spaced ducts formed within said structural member, said ducts extending from and intersecting a respective one of said bores at one end thereof and extending to and opening into said plane at the other end thereof, the lateral spacing of said ducts being different from the lateral spacing of said bores, said ducts each including a channel for the reception therein of a segment of the flexible film, the segments being drawn into their respective channels by the vacuum communicated through said bores and ducts and applied against the segments such that a drawing force is applied against the segments and a corresponding tension force is applied to the flexible film between the segments as a result of the different lateral spacing between said ducts, said tension force being applied in a direction substantially transverse to the direction of the drawing force, said drawing force and corresponding tension force serving to support the flexible film against said structural member and define thereby the supported section of the flexible film.

3,878,776

INFLATED BAG PRINTING DEVICE WITH ADJUSTABLE TYPE DRIVE

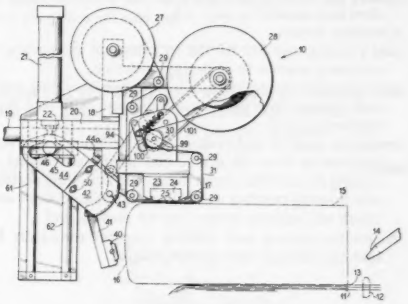
Walter M. Schneider, Chicago, Ill., assignor to Norwood Marking and Equipment Company, Downers Grove, Ill.

Filed Oct. 26, 1973, Ser. No. 410,095

Int. Cl. B41f *17/00*

U.S. Cl. 101—41 **3 Claims**

1. A bag imprinting device for imprinting a portion of a surface of a bag inflated from a stack of bags comprising: a frame member having an imprinting means thereon, the imprinting means including imprinting indicia positioned at an imprinting station, an anvil attached to a movable arm carried by a pivotable member pivotably attached to the frame, the anvil movable towards and away from the station in dependent response to movement of the pivotable member, the anvil effective to collapse a portion of a bag inflated from a stack of bags by an air jet and press a surface portion thereof against the indicia, tape supply and take up means on said frame, guide means guiding tape from said supply to said take up means past said station between the indicia and the bag, tape drive means for moving said tape from the supply to the take up means, power means carried by said frame including a movable power arm operatively attached to said pivotable member through a cam connection member, the pivotable member having two leg portions connected together by a bight portion, the cam member attached to one leg portion for movement therewith, the movable arm connected to the bight



portion for movement therewith, a linkage member having one end adjustably connected to the other of said leg portions, said linkage member having the other end thereof operatively connected to said tape drive to actuate the tape drive in dependent response to movement of the pivotable member, whereby movement of the power arm will simultaneously cause pivoting of the pivotable member with respect to portions of the frame thereby moving the anvil towards and away from the station while moving the tape from the supply to the take up means only when the anvil is in motion.

3,878,777

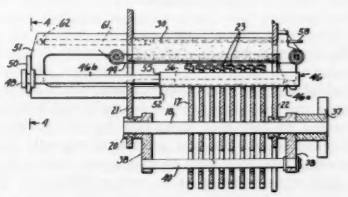
SQUEEZE PRINTER WITH ZERO ELIMINATION

John G. Clary, Pasadena, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed Nov. 23, 1973, Ser. No. 418,457

Int. Cl. B41j *1/28*

U.S. Cl. 101—93.28 **4 Claims**



1. A data printer comprising

a plurality of sectors arranged side-by-side and independently pivotal about a common axis,

arcuate sections carried by said sectors,

said arcuate sections being yieldable outwardly from said axis,

type characters spaced along the outer periphery of each of said arcuate sections,

a printing platen,

means for guiding a record medium intermediate said printing platen and said sections,

means for differentially advancing one or more of said sectors about said axis from initial positions whereby to present certain of said type characters to a printing line,

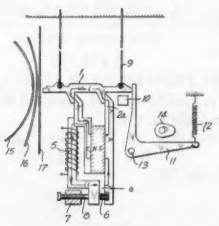
an elongate printing member extending under said arcuate sections and parallel to said axis,
said printing member having an actuating portion normally under all of said arcuate sections,
said printing member being movable outwardly from said axis through a printing stroke whereby to cause said actuating portion to move overlying ones of said sections outwardly into printing engagement with said record medium,
means for moving said printing member lengthwise in a direction parallel to said axis,
a sensing device,
said printing member having an extension connecting said actuating portion to said sensing device,
said extension being ineffective to move overlying ones of said sections into printing engagement with said record medium,
means on each of said sectors effective when a said sector has moved from its said initial position to arrest said sensing device whereby to locate said actuating portion of said printing member under those arcuate sections across which said sensing device has not moved, and
means for moving said printing member outwardly from said axis through said printing stroke.

3,878,778

PRINTER

Yoshifumi Gomi, Chino, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jan. 11, 1973, Ser. No. 322,840
Claims priority, application Japan, Jan. 11, 1972, 47-5379; Jan. 17, 1972, 47-6816
Int. Cl. B41j *9/38*
U.S. Cl. 101—93.29 **9 Claims**



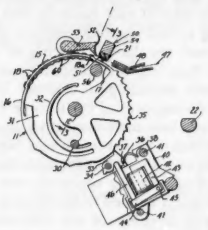
1. In a printer having respective control means for print hammers which are arranged in a plurality of columns and each of which is displaceable between a rest position and a print position, and having respective deformable elastic bodies maintained in deformed condition by the associated print hammers in the rest position, improved magnetic circuit control means associated with each of said columns for holding each said print hammer at its rest position and selectively releasing same for displacement to a print position including a permanent magnet, a first hammer hold magnetic circuit portion associated with each print hammer including a portion of the associated print hammer and a second release magnetic circuit portion associated with each print hammer including release coil means and means for adjusting the magnetic reluctance of the release magnetic circuit portion said release coil means including means for applying signals thereto, said first and second magnetic circuit portions being connected in parallel with said permanent magnet, each of said magnetic circuit control means being adapted to hold said respective hammers in said rest position and to release said respective hammer upon application of a signal to its release coil means by means of said signal applying means in a direction so as to decrease the magnetomotive force applied to said hammer, the energy stored in the respective deformed body displacing said respective hammer from said rest position to said print position upon said decrease in said magnetomotive force.

3,878,779

SQUEEZE PRINTER

John G. Clary, Pasadena, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed Nov. 8, 1973, Ser. No. 414,089
Int. Cl. B41j *1/30*
U.S. Cl. 101—99 **4 Claims**



1. A data printer comprising
a plurality of sectors arranged side-by-side and independently pivotal on a common axis,
arcuate sections extending concentrically of said axis and supported by said sectors,
said arcuate sections being flexible radially outwardly of said axis,
type characters spaced along the outer periphery of each of said arcuate sections,
detenting formations spaced along the inner periphery of each of said arcuate sections,
an elongated printing platen extending axially adjacent the type characters of all said arcuate sections at a fixed radial distance from said common axis,
means for guiding a record medium intermediate said printing platen and said sections,
means for differentially advancing said sectors independently of each other about said axis whereby to present certain of said type characters to said printing platen,
a single elongated aligning member extending under said arcuate sections and parallel to said axis, and
means for moving said aligning member radially outwardly from said axis whereby to engage overlying ones of said detenting formations to thereby index said type characters into axial alignment and also to flex said sections outwardly to impress said record medium against said printing platen.

3,878,780

RESILIENTLY SUPPORTED AIR BLADDER FOR BIASING SQUEEGEES

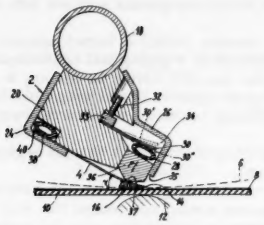
Andre Lotte, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse Cedex, France

Filed Dec. 28, 1973, Ser. No. 429,367
Claims priority, application France, Jan. 2, 1973, 73.00011
Int. Cl. B41f *15/42, 15/44*
U.S. Cl. 101—119 **5 Claims**

1. An apparatus for use with a printing machine having a screen, comprising
an elongated doctor-holder,
a doctor including an elongated strip of thin flexible material having one longitudinal securing marginal portion secured in said doctor-holder and an opposite longitudinal free wiping marginal portion to be operably engaged against the screen of said printing machine,

an elongated pneumatic pressure bladder longitudinally disposed in said doctor-holder and having an operating face operably contacting said doctor intermediate said marginal portions of said doctor adjacent said wiping marginal portion and an oppositely directed backing face, and

an intermediate bearing member interposed between said backing face of said bladder and said doctor-holder, and wherein said intermediate bearing member includes



a further elongated flexible metallic strip longitudinally disposed in said doctor-holder, said further strip having one longitudinal marginal portion rigidly secured in said doctor-holder and an opposite longitudinal marginal free portion, said backing face of said bladder bearing on said further strip between said two marginal portions and adjacent said free marginal portion of said further strip under stressed, bent condition of said further strip,

whereby said operably engaged portion of said doctor is applied against the screen with a constant pressure over the entire length of said doctor.

3,878,781

ROLLER PRINTER

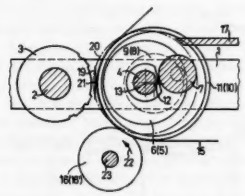
Gottfried Burkhardt, Winkelhaid; Andreas Metschnabl, Altenfurt, and Paul Greppmaier, Moorenbrunn, all of Germany, assignors to DIEHL datensysteme GmbH, Nurnberg, Germany

Filed Sept. 24, 1973, Ser. No. 399,959

Claims priority, application Germany, Sept. 26, 1972, 2247175; Apr. 7, 1973, 2317641

Int. Cl. B41f *13/54*

U.S. Cl. 101—228 **7 Claims**



1. A roller printer for durably maintaining more uniform printing quality of a type which includes: frame means, a driving shaft rotatably journalled in said frame means, bearing means connected to said driving shaft for rotation therewith, a printing roller rotatably supported by said bearing means and arranged eccentrically with regard to said driving shaft, said driving shaft being operable to carry out a complete revolution per each printing operation, main shaft means rotatably supported by said frame means and drivingly connected to said driving shaft, type wheel means supported by said main shaft means for rotation therewith, cylindrical paper guiding means rotatably supported by said frame means and located eccentrically with regard to the axis of rotation of said driving shaft, said paper guiding means and said type wheel means being spaced from each other so as to define a gap therebetween representing the printing area of said roller printer, said paper guiding means being engaged by and guiding a web of paper to be printed upon through said gap, ink ribbon means, and means for normally passing said ink ribbon means through said gap in spaced relationship to said type wheel means and at such a distance from said paper guiding means as to be spaced from a web of paper in said paper guiding means within said gap, the location of said printing roller on said bearing means relative to the axis of rotation of said driving shaft and said paper guiding means being such as to press said ink ribbon against said type wheel means adjustable for printing free of any phantom printing when carrying out a paper advance and kept stationary when said printing roller passes through said gap.

3,878,782

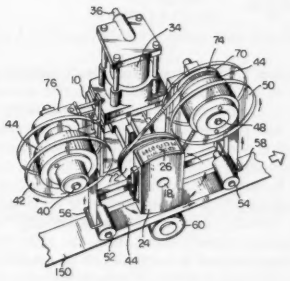
IMPRINTING MACHINE AND METHOD OF OPERATION

Delphos R. Coffelt, Hicks St., Hicksville, Ohio 43626

Filed Apr. 13, 1973, Ser. No. 350,883

Int. Cl. B41f *17/26*

U.S. Cl. 101—235 **5 Claims**



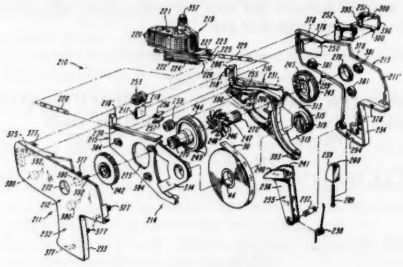
1. In an imprinter; a frame, a rotary printing head and a pressure member in radially opposed relation in said frame, means in said frame for advancing said printing head toward said pressure member into printing position and for retracting said printing head away from said pressure member into idle position, ribbon supply means operable to supply a ribbon into the space between said printing head and pressure member which will imprint on a workpiece disposed between the ribbon and said pressure member when said printing head is advanced into printing position, feed means for feeding said ribbon in the circumferential direction of said printing head when the printing head is advanced into printing position, said ribbon supply means includes means for rotatably supporting a ribbon supply reel on said frame on one side of said pressure member, said ribbon feed means being disposed in said frame on the other side of said pressure member, a ribbon wound up on the supply reel and leading therefrom to said feed means, first means for driving said print head in rotation continuously, and second means for driving said feed means only while said printing head is advanced into printing position, and a bracket, a printing shaft journaled in said bracket and having said printing head mounted on one end thereof, pivot means pivotally connecting the end of said bracket opposite the print head to said frame and said means for advancing and retracting said printing head comprising a reversible actuator connected between said frame and an intermediate point of said bracket, said feed means including a take up reel rotatable in said frame and to which said ribbon is connected, a pulley on said printing shaft, a pulley connected to said take up reel, and a stretch belt entrained about said pulleys, movement of said printing head into printing position drawing said belt tight to cause driving of said take up reel.

3,878,783

LABEL PRINTING AND APPLYING APPARATUS

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio

Division of Ser. No. 312,454, Dec. 6, 1972, which is a continuation-in-part of Ser. No. 208,035, Dec. 8, 1971, abandoned. This application Mar. 7, 1974, Ser. No. 449,127
Int. Cl. B41f *1/46*
U.S. Cl. 101—348 5 Claims



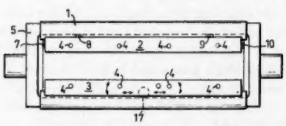
1. An ink roller for a printing apparatus, comprising: a hub having a pair of hub sections, each hub section having a roll-mounting portion, a flange, and a stub end, the flange of each hub section being disposed between the respective roll-mounting portion and the stub end of each hub section being integrally constructed of molded plastics material, one of the hub sections having a projection and the other hub section having a recess in which the projection is received, and an ink-receptive tubular porous roll received by the roll-mounting portions between the flanges, the stub ends being capable of being snapped in snap-sockets to rotatably mount the ink roller, the flanges being not substantially less in diameter than the diameter of the porous roll and being of sufficient extent to be capable of bearing against a bearing surface of a print head and the ink-receptive roll being capable of inking printing members.

3,878,784

METHOD OF FASTENING A PRINTING PLATE ON A CYLINDER IN A PRINTING PRESS AND DEVICE FOR SAID FASTENING

Ingvald Dyrberg, Sollentuna, and Algot Ingemar Eriksson, Solna, both of Sweden, assignors to AB Printing Equipment, Sollentuna, Sweden

Continuation of Ser. No. 269,703, July 7, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,552
Claims priority, application Sweden, July 12, 1971, 9012/71
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 3 Claims



2. Apparatus for uniformly tightening a thin printing plate on a plate cylinder in a printing press, said cylinder having a channel extending the length of said cylinder, said channel having first and second spaced side wall portions;

a first elongated ruler assembly;

means for securing one marginal edge of said printing plate to said first ruler assembly;

one edge of said first ruler assembly having first and second spaced projections being positioned to bear against said first side wall;

a second ruler assembly for securing the remaining marginal edge of said plate;

an arm having a first end pivotally secured to said second ruler assembly;

the free end of said arm having a wedge-shaped cross-section to provide a first wedge surface;

a wedge member being positioned to have one surface thereof in sliding engagement with said first wedge surface;

said wedge member having a tapped aperture; a screw member threadedly engaging said tapped aperture; said second ruler assembly having an opening in alignment with the tapped aperture in said wedge member;

a rollable bearing mounted on said arm intermediate its ends;

said bearing being positioned to rollingly engage said second side wall;

said wedge member being adapted to swing the free end of said swing arm toward said second side wall when said screw member is tightened to urge the wedge member toward the second ruler assembly and move the bearing toward the second side wall causing said second ruler assembly to move away from said second side wall;

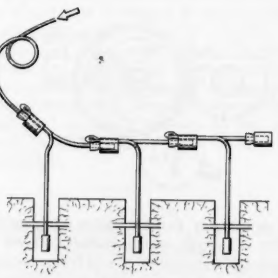
said bearing being the only contact between said second side wall and said second ruler assembly whereby said plate is secured to said cylinder at only three points, said first and second projections constituting two of said three points and said bearing being the third point, whereby the rolling engagement between said bearing and said second side wall permits lateral movement of said second ruler assembly to assure the application of uniform tension upon said plate by said first and second ruler assemblies.

3,878,785

PROPAGATION DEVICE AND INITIATION SYSTEM FOR LOW ENERGY FUSES

Hans Krister Lundborg, Asvagen, Sweden, assignor to Nitro Nobel Aktiebolag, Gyttorp, Sweden

Filed Nov. 15, 1972, Ser. No. 306,923
Claims priority, application Sweden, Dec. 1, 1971, 15380/71
Int. Cl. C06c *5/06*
U.S. Cl. 102—27 R 7 Claims



1. An explosive assemblage comprising in combination a first length of impulse propagating means having first and second ends, a first connecting block engaging said first length of impulse propagating means intermediate its first and second ends, said connecting block having an impulse intensifier means operatively adjacent the engaged region of said first length of impulse propagating means, a second length of impulse propagating means having one end for receiving an initiation impulse and a second end engaged by said first connecting block operatively adjacent said impulse intensifier means, a detonator for an explosive charge connected to the

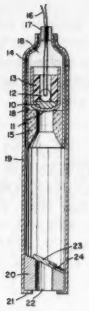
first end of said first length of impulse propagating means, and a second connecting block including another impulse intensifier means connected to the second end of said first length of impulse propagating means so that when said one end of said second impulse propagating means receives an initiation impulse it propagates to the impulse intensifier means in said first connecting block which generates an intensified impulse which propagates simultaneously to the first and second ends of said first impulse propagating means.

3,878,786

SAFETY DETONATOR DEVICE FOR DETONATING FUSECORD

John Jerold Ridgeway, Paris, France, assignor to Explo-Ridgeway International Limited, St. Heliers, Jersey, Channel Islands

Filed Dec. 27, 1973, Ser. No. 428,699
Int. Cl. C06c *5/06*
U.S. Cl. 102—27 R **12 Claims**



1. A detonator device for initiating detonating fusecord comprising a closed elongated housing having at one end a charge of initiating explosive composition capable of initiating detonating fusecord and ignition means for igniting said charge, and having in its other end an aperture through which an end of a length of detonating cord may be inserted into position in the housing for initiation by the said explosive charge, said aperture being closed by an internally movable valve element which is arranged to be forced to a closed position by the force of said charge if accidentally detonated and which is displaceable from the aperture to permit an end length of detonating cord to be inserted into the housing, the closed housing being sufficiently strong to confine the explosion energy in the event of premature detonation of the said charge of initiating explosive.

3,878,787

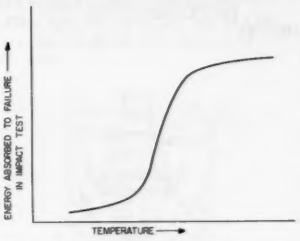
CRYOGENIC EXPLOSIVE FRAGMENTATION

John Bernard Lightstone, White Plains; Jaak Stefaan Van den Sype, Mount Kisco, and Richard Benedict Mazzarella, Peekskill, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 23, 1972, Ser. No. 282,976
Int. Cl. F42b *3/00*
U.S. Cl. 102—23 **11 Claims**

1. A process of fragmenting scrap metal so that the ferrous and non-ferrous components of said scrap metal can be readily separated comprising the steps of:

a. chilling the scrap metal to be fragmented to a temperature at which it is substantially embrittled, and



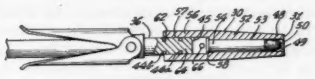
b. detonating an explosive proximate to said chilled scrap metal so as to fracture said scrap metal.

3,878,788

POWERHEAD

Lawrence J. Ah Sam, 3534 Farmdale Ave., Los Angeles, Calif. 90016

Filed Oct. 20, 1971, Ser. No. 190,833
Int. Cl. F42b *13/54*
U.S. Cl. 102—48 **6 Claims**



1. A powerhead combination, said powerhead comprising:

A. An elongated element, said element being securable to the end of a fishing spear as a projection thereof and having a configuration such that its cross-section is substantially identical for a pre-determined distance from its free end, said element being tipped on its free end with a firing pin;

B. A barrelhead, said barrelhead comprising a sleeve having:

i. a first section axially orificed to permit the discharge fired from a cartridge to pass therethrough;

ii. a second and counterbored section to receive a cartridge shell and to retain it for firing; and

iii. a third axially orificed section, the cross-section of said third section being identical in configuration to the cross-section of said elongated element for said predetermined distance, but sufficiently larger in its dimensions, compared to those of the cross-section of said elongated element, to permit slidable insertion of said element, in the axial orifice of said third section in a close telescoping fit; and

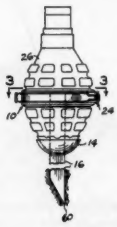
C. Yieldable means interposed between the adjacent surfaces of said element and the orifice-defining wall of said third section to provide a predetermined quantum of frictional resistance to the telescoping of said element and said third section of said barrelhead;

Whereby, when a cartridge is loaded into said second section of the barrelhead and the third section of the barrelhead is partially axially slipped over said element, the cartridge will be fired by any impacting of the free end of the barrelhead occasioned by jamming the spear into an object, which impacting is sufficient to overcome said predetermined quantum of frictional resistance and thereby cause the further telescoping of the element and barrelhead to where the firing pin strikes the cap end of the cartridge disposed in the second section of the barrelhead.

3,878,789
HAND GRENADE SUPPORT

Joshua D. Hall, Boiling Spring Lakes, N.C. 28461

Filed Apr. 9, 1973, Ser. No. 349,571
Int. Cl. F42b 27/08, 23/10
U.S. Cl. 102—64 3 Claims

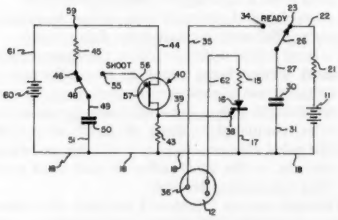


1. In a grenade support for a hand grenade having a casing containing an explosive charge, the improvement comprising:
clamp means including a pair of semicircular jaw members surrounding said grenade casing intermediate its ends and being hingedly connected together at one end for movement toward and away from each other;
latch means releaseably connecting the other ends of said jaw members; and,
socket forming means including an earth penetrating stake secured to said clamp means for supporting said hand grenade adjacent the surface of the earth.

3,878,790
SEISMIC BLASTER CIRCUIT

Herbert Joram Meyer, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 7, 1970, Ser. No. 61,965
Int. Cl. F23q 7/00; G01v 1/06
U.S. Cl. 102—70.2 R 5 Claims

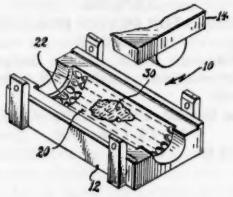


1. Blaster circuit for seismic operations, comprising in combination
a shooting capacitor having sufficient capacity to fire a substantial number of blasting caps,
first alternative circuit means for connecting a source of e.m.f. across said shooting capacitor for charging same,
second alternative circuit means for connecting said blasting caps across said shooting capacitor in series with electronic gate means for permitting maximum current flow immediately when said gate is triggered, and
a single-pole double-throw switch for alternatively completing said first or second circuit.

3,878,791
ENCAPSULATED PELLET IGNITER CHARGE

Herbert H. Askwith, Garden Grove; Owen J. Buckheim, Calimesa, both of Calif., and Orville O. Henderson, Everett, Wash., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Jan. 17, 1969, Ser. No. 792,172
Int. Cl. C06d 5/06
U.S. Cl. 102—101 1 Claim

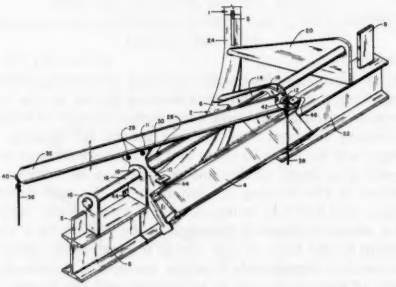


1. A molded pellet mat comprising a mat molded of a polyurethane mix, said mat having a cross section equivalent to half the cross section of an annular igniter cavity and a plurality of pyrotechnic pellets embedded in a prearranged pattern within said mat whereby a pair of said molded pellet mats can be utilized as an igniter charge.

3,878,792
SWITCHING MECHANISM FOR MONORAIL CONVEYORS

Walter F. Larson, P.O. Box 1967, Plainview, Tex. 79072

Continuation of Ser. No. 873,302, Nov. 3, 1969, abandoned.
This application Aug. 9, 1971, Ser. No. 170,301
Int. Cl. E01b 25/22
U.S. Cl. 104—101 6 Claims



1. A composite, self-contained switch for a conveyor rail system, which conveyor rail system is supported on a structure, the rails of which system receive trolleys thereon for movement therealong. which switch comprises;
a. upstanding lugs mounted on the upper side of the rails of the conveyor system, adjacent the ends of the switch unit,
b. a substantially horizontal shaft mounted on said lugs and supported thereby,
c. rail support members on and secured to said shaft for arcuate movement about the axis of said shaft,
d. at least two switch rails mounted on said rail support members for arcuate movement about the axis of said shaft,
1. one of said switch rails being adapted to register with one of the rails of the conveyor system, when said switch rails are in one position,

2. another of said switch rails, mounted on said support members, being adapted to register with one of the rails of the conveyor system, when said switch rails are in another position,

e. a support, for an elongated tubular member, mounted on and secured to said shaft, and movable therewith, which support extends upwardly from said shaft,

1. an elongated tubular member, having at least partially closed ends, mounted on and secured to said support member near the upper end thereof, to support said elongated tubular member transversely of said shaft for arcuate movement about the axis of said shaft, which elongated tubular member extends outwardly on each side of said shaft,

f. an elongated weight positioned in said elongated tubular member and being slidable longitudinally therein, over the center of gravity, to one end of said tubular member to hold said switch in this position until the tubular member is moved, and

g. mechanical actuator means fixedly connected to each end of said elongated, tubular member to selectively move said elongated, tubular member through an arc about the axis of said horizontal shaft to slide said weight therein over the center of gravity to the opposite end of said tubular member to hold said switch in fixed relation with respect to said conveyor system.

3,878,793

FLOOR CONVEYORS

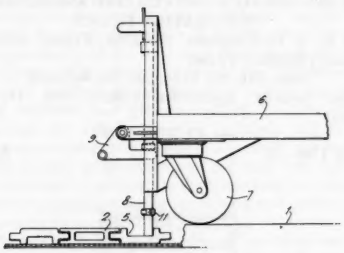
John Turner, Stevenage, England, assignor to Geo W. King Limited, Stevenage, England

Filed Oct. 9, 1973, Ser. No. 404,711

Claims priority, application United Kingdom, Oct. 6, 1972, 46323/72; United Kingdom, Oct. 6, 1972, 17006/73

Int. Cl. B65g *17/42*

U.S. Cl. 104—172 BT **12 Claims**



1. In a tow-line conveyor system, a combination comprising first and second towing chains, a load-carrying truck towed by a chain by way of a towing projection extending from the truck into towing engagement with the chain, and deflecting means which serve to deflect said truck laterally, thereby to transfer the projection extending from said truck from registration with said first chain to registration with said second chain at a selected transfer station of said system, said deflecting means comprising deflecting parts which are situated at respective transfer stations of said system and which, from the point of view of said truck as it passes said deflecting parts in turn, are distributed widthwise of the truck, mounts on said truck distributed widthwise of said truck, a deflecting part mounted at a selected one of said mounts and movable, independently of said projection, from said one to another of said mounts, said deflecting part being arranged to contact a selected one of said deflecting parts by way of a deflecting surface oblique to said first chain as viewed in plan, whereby there is applied to said deflecting part by said selected one of said deflecting parts a component reaction force transverse to said first chain which force urges said deflecting part and thus said truck to move transversely to said first chain.

3,878,794

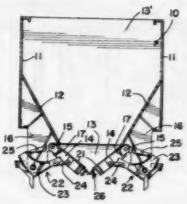
BOTTOM DUMPING MATING HOPPER DOORS SEALING ARRANGEMENT

Franklin P. Adler, Michigan City, Ind., assignor to Pullman Transport Leasing Company, Chicago, Ill.

Filed Apr. 24, 1974, Ser. No. 463,706

Int. Cl. B61d *7/18, 7/22, 7/26*

U.S. Cl. 105—250 **4 Claims**



1. A hopper car with a hopper including side walls having adjacent lower portions thereof a discharge opening, a pair of doors supported on said hopper for hinging movement about longitudinal axes for opening and closing said discharge opening,

longitudinally extending distal portions on said door in said closed position being in substantially contiguous relation, the improvement comprising:

a sealing arrangement connected to said distal portions,

said sealing arrangement including first and second sealing elements connected to said distal portions of said doors, at least one of said sealing elements being of generally hairpin shaped configuration including an anchoring flange connected to the distal portion of one of said doors,

said hairpin shaped first sealing element including a second resilient flange connected to said anchoring flange by a spring-like arcuate finger,

said finger providing a first longitudinally extending contact surface,

a second contact surface on said second sealing element engageable with said first contact surface to seal said doors in a closed position, and

adjustable means engageable with said flanges to move the same relative to each other whereby said finger and first contact surface is adjusted relative to said second contact surface.

3,878,795

COLLAPSIBLE PALLET CONTAINER

Edward E. Janda, Hackettstown, N.J., assignor to Rockaway Corporation, Rockaway, N.J.

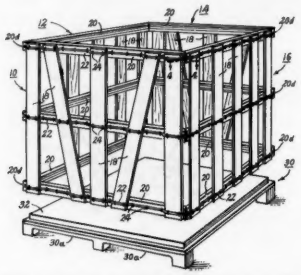
Filed Apr. 20, 1973, Ser. No. 352,885

Int. Cl. B65d *9/16, 19/44*

U.S. Cl. 108—55 **8 Claims**

1. A collapsible pallet container comprising four side sections, each composed of face material with at least two sets of reinforcing cleats secured to the inner face thereof and extending across said side sections, binding straps foldably securing said side sections together in the form of a collapsible rectangular container, said straps encircling said container and overlying said cleats; and means for securing said straps to said container side sections; said straps each having a pair of free ends operatively interconnected to each other to form a closed loop which does not slide in the longitudinal section of the strap during the collapse or expansion of the container, said securing means tightly securing the straps to the outer surface of the face material of each of said side sections to prevent longitudinal movement of the closed loops, the ends of the cleats on each side section abutting the ends of the cleats on the adjacent side sections when said container is

expanded to rectangular form, said ends of said cleats being preformed and shaped with interengaging complementary surfaces, the edges of the face material about which said loops are bent across said corners being set back from the intersection of the planes of the outer faces of the cleats at at least two opposed corners of said tube a distance approximately equal to the sum of 1.4 times the depth of said cleats plus 0.43 times



the thickness of said face material, said closed loops extending across said corners in a substantially straight line between said edges in both the collapsed and expanded positions of said container, whereby the length of the path of the closed loops across the corners is the same in both the collapsed and expanded positions of the container so that said container can be collapsed into flattened form or expanded into rectangular form without longitudinal movement of said loops.

3,878,796

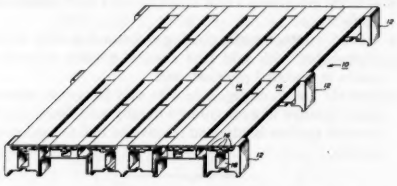
PLASTIC PALLET ASSEMBLY

Thomas Morrison, Fair Haven, Granville Middleton, Trenton, N.J., assignor to Econopal Inc., Marlboro, N.J.

Filed Dec. 5, 1973, Ser. No. 421,962

Int. Cl. B65d *19/12*

U.S. Cl. 108—56 **5 Claims**



1. A plastic pallet assembly comprising a plurality of spaced longitudinal stringers, each stringer having on at least its upper surface a plurality of shoulders and notches and a plurality of boards extending transversely of the stringers and having shoulders and notches of equivalent size and shape to those of the stringer, said shoulders and notches of the stringers and boards in interlocked relationship with each other with the shoulders of the stringers positioned in the notches of the boards and the shoulders of the boards positioned in the notches of the stringers.

3,878,797

PATTERN TABLE

Marilyn Patterson, 769 26th St., Manhattan Beach, Calif. 90266

Filed Oct. 3, 1973, Ser. No. 402,894

Int. Cl. A47b *13/08*

U.S. Cl. 108—90 **5 Claims**

1. A table comprising

a first section having

a planar support surface and

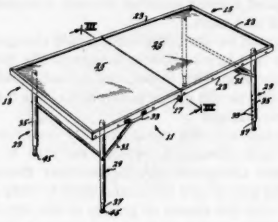
a lip means about the entire periphery except for one lineal edge thereof,

a second section having

a planar support surface and

a lip means about the entire periphery except for one lineal edge thereof,

means attaching said first and second sections at said lineal edges thereof along which said lips do not extend for movement between an abutting position and a non-abutting position, and



work surface means, removably insertable into said lip means when said two planar support means are in other than an abutting relationship and adjacent lip ends of said first and second sections are not in abutment, and fixed within said lip means in abutting relationship with one another when said planar support means are in coplanar abutting relationship and the adjacent lip ends are in abutment.

3,878,798

ROTARY FURNACE AND COAXIAL ASH-RECEIVER INCINERATION DEVICE

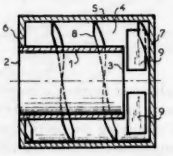
Michel G. J. Du-Chambon, Versailles, France, assignor to Locaner, Buthiers, France

Filed Feb. 13, 1974, Ser. No. 442,016

Claims priority, application France, Feb. 16, 1973, 73.05631

Int. Cl. F23g *5/06*

U.S. Cl. 110—14 **5 Claims**



1. An incineration device, in particular for rubbish and other household or industrial refuse, of the type comprising a rotatable furnace casing having an axis of revolution about which the casing is rotatable, said casing having one end for the introduction of the said rubbish or refuse and an opposite end for discharge of ashes and incineration residues, an ash-receiver comprising a second casing for receiving said ashes and incineration residues discharged from the opposite end of the furnace, said second casing being concentric with the furnace casing and closed at its opposite ends and being of a length longer than the furnace casing whereby to extend beyond the discharge end of the furnace, said second casing being provided with at least one helical blade in at least a portion of the space between the two concentric casings and being rotatable in opposite directions in one of which, in cooperation with said blade, said ashes and residues are

moved toward said one end of said furnace, said second casing being provided adjacent the discharge end of the furnace with at least one door permitting discharge of said ashes and residues from said second casing upon reversing the direction of rotation of said second casing relative to said one direction of rotation thereof.

3,878,799

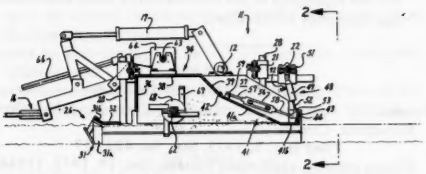
SEED BED SHAPING APPARATUS WITH AUTOMATIC MEANS FOR APPLYING PRESSURE TO THE SOIL

Clyde L. Taylor, 1545 S. Chinowith Rd., Visalia, Calif. 93277, and Russell E. Jordan, 285 W. I St., Brawley, Calif. 92227

Continuation of Ser. No. 860,927, Sept. 25, 1969, abandoned. This application Dec. 15, 1971, Ser. No. 208,480

Int. Cl. A01c *5/00*

U.S. Cl. 111—59 **7 Claims**



1. In an agricultural apparatus of the type adapted for use in shaping raised seed beds in the ground having sloped sides and a top surface which are arranged in elongated rows, a framework, wheeled gound-engaging means carried by the framework to permit movement of the framework in a direction longitudinally of the rows, bed shaping means mounted on the framework and including at least one bed-shaper in the form of an inverted trough having a pair of spaced side-shaping members and ground-engaging member disposed intermediate the side bed-shaping members and having at least one portion thereof movable in a generally vertical direction with respect to the surface of the seed bed, and power means including an actuator on the framework and secured to said ground-engaging member for moving said portion of said ground-engaging members in a vertical direction with respect to the framework to shape the surface of said bed, said power means also including means for supplying a fluid under a predetermined pressure to said actuator whereby said portion of ground-engaging members is yieldably urged into engagement with the top surface of the bed to apply a uniform force to the top surface of the bed regardless of changes in elevation of the top surface of the bed relative to the framework as the framework is advanced along the rows.

3,878,800

FINE GAUGE TUFTING MACHINES

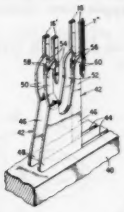
James R. Collier, and Randel R. Smith, both of Chattanooga, Tenn., assignors to The Singer Company, New York, N.Y.

Continuation of Ser. No. 232,836, March 8, 1972, abandoned. This application Jan. 7, 1974, Ser. No. 431,518

Int. Cl. D05c *15/22*

U.S. Cl. 112—79 R **5 Claims**

1. A single piece looper for a tufting machine including a shank portion for supporting said looper in a slot in a looper bar, at least two separate looper bills integral with and extending outwardly from said shank portion, said looper bills being spaced apart in the direction of the slot and disposed in spaced planes generally parallel to said shank portion such that each said looper bill is disposed for cooperation with yarn carrying needles spaced apart in the direction of the slot and disposed



in spaced planes generally parallel to said looper shank portion for seizing a loop of yarn therefrom to form a pair of tufts.

3,878,801

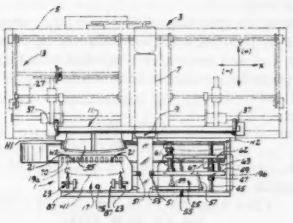
LOADER-UNLOADER FOR AUTOMATIC SEWING APPARATUS

William R. Conner, Jr., Shelbyville, Tenn., assignor to Stahl-Urban Company, Brookhaven, Miss.

Filed Dec. 7, 1973, Ser. No. 422,682

Int. Cl. D05b *33/00*

U.S. Cl. 112—121.29 **25 Claims**

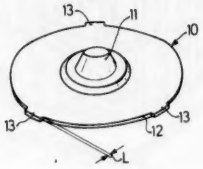


24. Automatic sewing apparatus comprising a sewing machine, a work holder, means for effecting relative movement of said sewing machine and work holder for stitching work held by the holder, and transfer means for loading the work holder with work and unloading work from the work holder, wherein the work holder comprises a platform and means for clamping work on the platform, and the transfer means comprises a table movable between a retracted position and a load position relative to the work holder, said table being adapted for placement of work thereon where in its retracted position and for bringing the work to the work holder when moved to its load position, said clamping means being engageable with the work on the table when the table is moved to its load position to cause the work to be deposited on the platform as the table moves back to its retracted position, and means on the table engageable with previously sewn work on the platform as the table moves back to its retracted position to move said previously sewn work off the platform.

3,878,802
MOTOR HOUSING AND METHOD OF MAKING THE SAME

Jakob Schmitt, Oberwurzbach, and Willy Voit, St. Ingbert, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed June 15, 1973, Ser. No. 370,412
Claims priority, application Germany, July 25, 1972, 2236408
Int. Cl. H02k *15/14*
U.S. Cl. 113—120 UE **2 Claims**



1. A method of producing pot-shaped housings, of the type used to house small electric motors, from a housing end piece and a housing wall piece, comprising the steps of:
making the end piece so as to provide a plurality of radially projecting tabs on its periphery;
making the housing wall piece in the form of a flat strip with holding slots in which said tabs of said end piece may engage when said wall piece is bent around said end piece;
bending said wall piece around said end piece while sequentially engaging said end piece tabs in said holding slots so that by the time said wall piece is fully bent around said end piece, said end piece is already fully held against axial and rotational displacement with respect to said wall piece, and
completing the bending of said wall piece around said end piece by securing together the meeting edges thereof to form a closed circumferential wall or tube holding said end piece in one axial end thereof.

3,878,803
CAN FLOAT PONTOON

William L. Leverton, 1735 33rd Pl. S.E., No. 204, Washington, D.C. 20020

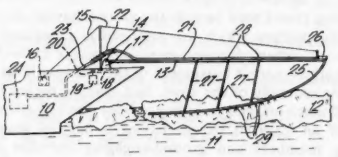
Filed Aug. 29, 1974, Ser. No. 501,708
Int. Cl. B63b *35/44*
U.S. Cl. 114—.5 F **5 Claims**

1. A pontoon structure intended to use empty beer and beverage cans in the structure thereof, the pontoon structure comprising:
a hollow dome shaped nose cone;
a nose cone retaining disc having a front surface and a back surface, the back surface having a plurality of radially disposed circumferally spaced apart circular recesses formed therein;
a first retaining disc being of a flat configuration having a front surface and a back surface, the front surface having a plurality of radially disposed circular recesses disposed therein with each recess associated with a recess of the nose cone retaining disc and being disposed on the front surface in a position corresponding thereto;
an elongated rigid rod extending axially between the centers of the nose cone retaining disc and the first retaining disc to retain the discs interconnected a spaced distance apart from each other and in parallel concentric overlying relationship with each other;
a plurality of hollow elongated plastic tubes, each tube being identical to each other tube, the tubes being of a length to extend between the retaining discs with the ends thereof received in associated ones of the disc recesses with the tubes thus being fixed in side-by-side relationship; and
a compartment extending axially completely through each tube, the compartment being of a size and configuration adapted to receive therein a plurality of axially aligned empty beer and beverage cans in end-to-end relationship for the rigidifying of the tube structure while maintaining the buoyancy of the tube.

3,878,804
ICE-BREAKING APPARATUS

Friedrich J. Legerer, 90 Cumberland Cres., St. John's, Newfoundland, Canada

Filed Dec. 7, 1973, Ser. No. 422,517
Claims priority, application Canada, Dec. 19, 1972, 159448
Int. Cl. B63b *35/08*
U.S. Cl. 114—40 **16 Claims**



1. In a method of breaking ice in the path of travel of a vessel, the improvement comprising dragging a flexible hose having a series of nozzles in contact with the ice and directing jets of a heated medium from the nozzles of the hose against the contacted area of the ice.

2. Apparatus for forming a slit in an ice mass in the path of travel of a vessel, comprising:
a. a vessel;
b. a flexible hose having a plurality of nozzles in series along a portion of the length thereof;
c. means mounted on said vessel and connected to one end of said hose for dragging the same over the ice surface forwardly of the vessel during forward movement of such vessel, said nozzles being located on a side of the hose in contact with the ice during dragging thereof; and
d. means supplying a heated medium under pressure to said hose during use of said apparatus.

3,878,805
STABILIZED HORIZON PLANE SYSTEM

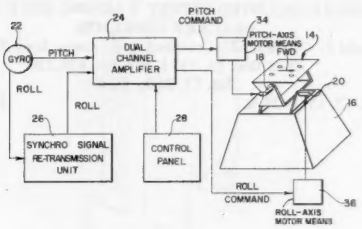
Duncan G. Stevenson, Kingston, Ontario, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Ontario, Canada

Filed Aug. 11, 1971, Ser. No. 170,905
Int. Cl. B63b *35/44*
U.S. Cl. 114—43.5 **1 Claim**

1. The combination of:

a ship having a helicopter landing area;

a horizontal-plane indicator member with a substantially flat upper surface mounted for angular movement about axes parallel to and transverse to the length of the ship, the indicator member being mounted in such a position on the ship and the flat upper surface being of such a size



as to be clearly visible to the pilot of a helicopter when landing on said area;

means for maintaining the indicator member in a horizontal altitude; and

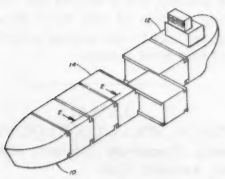
electroluminescent tape secured to the upper surface of the indicator member only at the peripheral area thereof.

3,878,806

CARGO VESSEL FLEXIBLY SIZABLE IN ACCORDANCE WITH ITS CARGO

Emilio C. Garcia, 1718 Lakeshore Dr., New Orleans, La. 70122

Filed Jan. 21, 1974, Ser. No. 435,053
Int. Cl. B63b *3/02*
U.S. Cl. 114—77 R **6 Claims**



1. A flexibly sized cargo vessel comprising:

a. transverse bow, stern and cargo segments, said segments being independent, watertight and having abutting interfaces;

b. male and female flanges defined respectively on said abutting interfaces at the tops and bottoms thereof and adapted to loosely interlock and make non-rigid connections between said transverse segments in aligned cargo vessel configuration of a bow, a stern and intermediate cargo segments commensurate with available cargo; and

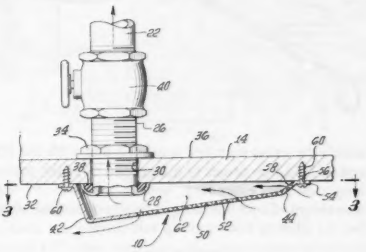
c. inflatably expandable cushions mounted uninflated between said loosely interlocking flanges and adapted to expand to pressures prestressing said loosely interlocking flanges into making said non-rigid connections between said transverse segments rigid against any relative motion therebetween.

3,878,807

WATER INTAKE STRAINER FOR USE ON BOATS

Nikola Reskusic, 1346 W. 19th St., San Pedro, Calif. 90732, and Jakov Reskusic, 1070 W. 18th St., San Pedro, Calif. 90731

Filed Dec. 26, 1973, Ser. No. 428,021
Int. Cl. B63b *13/00*
U.S. Cl. 114—198 **5 Claims**



1. In a water intake strainer to be mounted on the hull of a boat below the water line wherein said strainer overlies and is independent of the intake end of a water stand-pipe passing through said boat hull into the interior thereof, the improvement of a strainer member which is generally oblong and includes a leading portion and a trailing portion, a pair of elongated parallel side walls spaced one from the other extending between said leading and trailing portion, and a bottom strainer wall encompassing the area defined by said leading and trailing portions and said side walls and said bottom strainer wall inclined downwardly and rearwardly from said leading to said trailing portion;

said bottom strainer wall including a plurality of openings extending through said wall substantially throughout the entire area of said wall, whereby water may pass therethrough to said standpipe;

water jet means formed in said strainer member intermediate the said openings and said hull whereby when the boat is underway water may pass through said jet means at an increased velocity over water passing through said strainer bottom wall intermixing the water and thus reduce water turbulence within said strainer member; and said strainer member embodying attachment means for securing said member to said boat hull.

3,878,808

COMBINATION BOAT HOOK AND MOORING APPARATUS

Presley J. Mock, Jr., 815 S. Broadway, Laporte, Tex. 77571

Filed Nov. 12, 1973, Ser. No. 414,743
Int. Cl. B63b *21/54*
U.S. Cl. 114—230 **1 Claim**

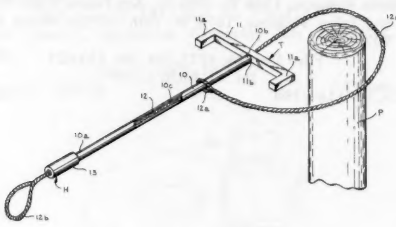
1. A combination boat hook and mooring apparatus for securing a small boat to a dock or piling comprising:

a. a longitudinally extending hollow tubular member having a bore extending longitudinally therethrough;

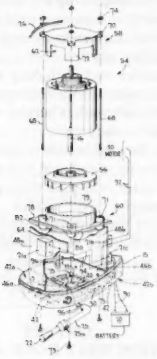
b. a cross member secured to one end of said longitudinal hollow tubular member and extending transversely thereof to form a T-shaped head on one end of said member with rearwardly projecting end portions to form a grapple thereon, said cross member having a bore extending longitudinally therethrough aligned with said tubular member bore for forming a continuous longitudinally extending passageway through said cross member and said tubular member;

c. a line extending through said continuous longitudinally extending passageway of said cross member and said

tubular member, said line projecting from opposite ends thereof, one end of said line secured externally to said longitudinally extending hollow tubular member with said line being sufficiently stiff to form a self-supporting open loop adjacent the end of said hollow tubular member at which the cross member is affixed and with the opposite end of said line projecting from the opposite end of said longitudinally extending hollow member to facilitate movement of said line longitudinally of said tubular member for closing and opening said loop.

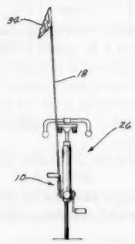


3,878,809
AIR-COOLED ELECTRIC OUTBOARD MOTOR
Morton Ray, 3801 Moss Dr., Annandale, Va. 22003
Filed Feb. 14, 1974, Ser. No. 442,420
Int. Cl. B63h *1/04*
U.S. Cl. 115—18 E **7 Claims**



1. In an electrical outboard motor apparatus including a propeller drive means, an air cooled power unit apparatus drivingly positioned above said drive means including an electric motor vertically oriented within a housing, and said motor with an output shaft in driving relationship to said propeller means, wherein the improvement comprises: a set of air port means for intake in the bottom wall of said housing and another set of air port means for exhaust in the bottom wall of said housing; upper and lower orifice means in said motor permitting air flow through said motor; said lower orifice means in communication with one of said sets of air port means; the other of said sets of air port means being located in the bottom wall of the chamber formed by the inside walls of said housing and the outside walls of said motor; said upper orifice means being in communication with said chamber; a fan mounted upon and driven by the shaft of said motor causing forced air circulation through said air port means, said orifice means, said motor, and said chamber, thereby providing dual pass cooling air flow; and ancillary speed control components necessary for controlling said electric motor mounted within said chamber where said speed control components are cooled by said forced air circulation.

3,878,810
VEHICLE MOUNTED SAFETY WARNING DEVICE AND BRACKET THEREFOR
Gerald L. Conrad, 623 Crawford Ave., Ames, Iowa 50010
Filed Dec. 19, 1973, Ser. No. 426,237
Int. Cl. B60q *1/26*
U.S. Cl. 116—28 R **5 Claims**

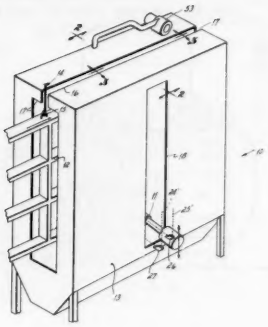


1. A safety flag support bracket comprising, a spiraled spring member having a support receiving end, a fastening means end,
the inside diameter of the spiral adjacent said fastening end being less than the inside diameter of the spiral adjacent said receiving end, and
a fastening means secured to the fastening means end of said spring member
said fastening means comprising a hook means slightly offset at an acute angle with respect to the longitudinal axis of said spring member, said hook means having a first side hook portion and a second side hook portion,
said first side portion of said hook means being slightly offset with respect to the vertical axis of said second side portion of said hook means.

3,878,811
OPTICAL SPRAY CONTROL SYSTEM
Frank Rombach, Kraainem, Belgium, assignor to Nordson Corporation, Amherst, Ohio
Filed June 4, 1973, Ser. No. 366,838
Int. Cl. B05c *5/00*
U.S. Cl. 118—2 **21 Claims**

1. A system for detecting the presence of articles in a coating zone and for causing a coating material to be applied to said articles in said zone comprising,
coating means for ejecting coating material along a spray path to a coating zone,
conveyor means for transporting articles through said coating zone,
said coating means being adapted to be moved in a path transverse to the direction of movement of said articles on said conveyor,
means for transmitting and receiving light remotely positioned and fixedly secured away from coating means,
light deflector means mounted adjacent to and movable with said coating means,
reflector means fixedly secured and spaced from said coating means so that articles to be coated pass between said reflector means and said deflector means, said articles in passing between said deflector means and reflector means

being operable to interrupt light rays transmitted between said deflector means and said reflector means, and



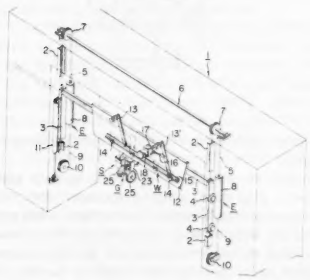
means responsive to interruption of said light rays to actuate said coating means.

3,878,812

APPARATUS FOR APPLYING WAX TO VEHICLES TO BE POLISHED

Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya-shi, Japan

Filed Aug. 1, 1973, Ser. No. 384,734
Claims priority, application Japan, Nov. 16, 1972, 47-11430
Int. Cl. B05c *5/00*
U.S. Cl. 118—2 **1 Claim**



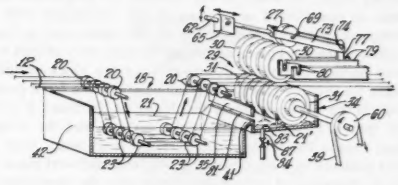
1. An apparatus for applying wax to painted upper surfaces of vehicles during movement thereof, comprising: a portal structure through which a vehicle can progress, a frame mounted on said portal structure for vertical movement relative thereto, elevator means operable to raise and lower said frame, guide means adapted to follow the top profile of the advancing vehicle and operable upon said elevator means to raise and lower said frame along the top profile of the advancing vehicle, wax ejector means supported on said frame to transversely span the advancing vehicle, and proximity sensor means supported on said frame and operable only when lying in proximity to any of the painted upper surfaces of the vehicle to energize said wax ejector means.

3,878,813

STRAND COATING AND DOCTORING APPARATUS

Cletis L. Roberson, Newark; Robert G. Russell, Granville; Ralph M. Stream, Newark, and Harold E. Leaman, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 847,669, Aug. 5, 1969, abandoned. This application Jan. 22, 1973, Ser. No. 325,269
Int. Cl. B05c *11/02*
U.S. Cl. 118—104 **2 Claims**



1. Apparatus for impregnating fibrous glass strands, comprising:

an impregnating bath through which a plurality of said glass strands are passed;

a two part die unit, each part having a resiliently deformable moving surface, said resiliently deformable moving surface of each part cooperating together in a contacting relationship to form an enveloping contact around each of said glass strands received from said impregnating bath and to exert pressure on said strands to remove impregnant from said strands in amounts dependent upon the pressure applied thereto by said surfaces;

means for selectively adjusting the pressure exerted on said strands by the adjacent surfaces of said die units;

the said adjacent surfaces of said die unit being provided by a pair of wheels rotating about parallel axis, the wheels being mounted one above the other;

means to maintain at least one said wheel wetted; and

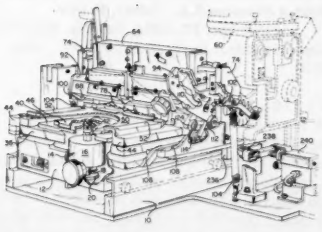
the means for selectively adjusting the pressure exerted on said strands comprising a variable load for exerting a static force, and a system for transmitting said force to said wheels including an idler wheel above said other wheels which is driven by friction of contact with said other upper wheel, the static force passing through said idler wheel such that said other wheels are made to exert a pressure on said linear material dependent on the magnitude of said force.

3,878,814

COATING MACHINE

Carl H. Brastow, Foxborough, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed June 8, 1973, Ser. No. 368,437
Int. Cl. B05c *1/02*
U.S. Cl. 118—203 **9 Claims**



1. A machine for applying a coating to a portion of a workpiece comprising: an applicator roll mounted for rotation about a prone axis; means for so rotating the applicator roll

about said axis that the bottom of the applicator roll moves rearwardly; means for so dispensing coating material to the applicator roll as to cause a film of the coating material of a prescribed thickness to adhere to the roll periphery; a scraper blade located adjacent to and spacedly from the applicator roll having a rearwardly and downwardly extending bottom that terminates in a rearwardly facing scraping edge; means mounting the scraper blade for heightwise movement; a carriage, located below the applicator roll and the scraper blade, mounted for forward-rearward movement; a workpiece supporting block, mounted to the carriage for heightwise movement, so constituted as to support the workpiece with said workpiece portion lying on top of the block and at least a portion of the workpiece adjoining the periphery of said workpiece portion extending downwardly of the block periphery; means for initially maintaining the carriage in a front position wherein the workpiece may be placed on the block in a location that is forward of the applicator roll and the scraping edge; means for moving the carriage rearwardly from said front position to a back position wherein said workpiece portion is rearward of the scraping edge and the applicator roll bottom; means, effective when at least a part of said workpiece portion is moving rearwardly past the scraping edge, to place the block in a lower block position wherein the block top is so spaced from the applicator roll bottom that the upwardly facing surface of said workpiece portion is a greater heightwise distance from the applicator roll bottom than the thickness of the film; means, effective when the block is in said lower block position, to place the scraper blade in a lower scraper blade position wherein the scraping edge bears against said upwardly facing surface; means for thereafter moving the carriage forwardly from said back position to said front position; means, effective during the forward movement of said workpiece portion past the applicator roll bottom and the scraping edge, to place the block in an upper block position wherein the block top is so spaced from the applicator roll bottom that said upwardly facing surface is a lesser heightwise distance from the applicator roll bottom than the thickness of said film; and means, effective during the forward movement of said workpiece portion past the applicator roll bottom and the scraping edge to place the scraper blade in an upper scraper blade position wherein said scraping edge is located heightwise between said upwardly facing surface and the applicator roll bottom; whereby, during said forward carriage movement, the applicator roll transfers coating material to said workpiece portion of a thickness determined by the heightwise spacing between said scraping edge and said upwardly facing surface; and whereby, during said rearward carriage movement, any blob of coating material that had previously been formed on the scraper blade is wiped onto said workpiece portion.

3,878,815

CONSTANT-FLOW SPRAY-GUN COATING MACHINE

Daniel Louis Marie Gorius, Pont-A-Mousson, France, assignor to Pont-A-Mousson S.A., Nanay, France

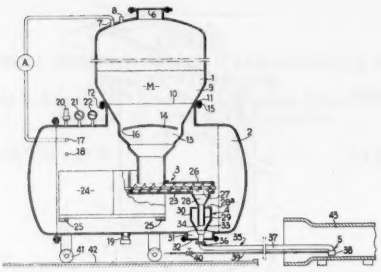
Filed Apr. 17, 1974, Ser. No. 461,770

Claims priority, application France, May 18, 1973, 73.18190

Int. Cl. B05c *7/02*

U.S. Cl. 118—318 **8 Claims**

1. A spray-gun coating machine, in particular for internal coating of cast-iron pipes with mortar, comprising a container for pulverulent or granular material, means defining an outlet in the container for outlet of the material, a screw conveyor for said material disposed under the outlet of the container, a tube which is provided at an outlet end with spraying means, pneumatic material driving means mounted between the screw conveyor and the tube, a case in which are disposed the screw conveyor and the pneumatic material driving means, pressurizing means connected to the container and to the case so as to create the same pressure in the container and the case, which pressure is higher than atmospheric pressure, and



means for supplying the air contained in the case to the material driving means.

3,878,816

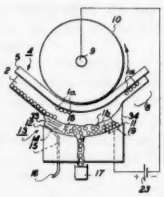
IMAGING SYSTEM

Jerome N. Harris, Webster; Sanford G. Hoffman, and John C. Witte, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 26, 1973, Ser. No. 382,786

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **41 Claims**



1. An apparatus for developing migration imaging members comprising:

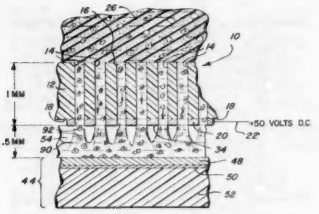
a meniscus support member with a surface adapted to receive a migration imaging member comprising a base having a development surface spaced adjacent and parallel to the longitudinal path of a migration imaging member, said development surface having a concave cross-section, said development surface having both an entrance edge and an exit edge, said development surface having at least one aperture connected to at least one passageway through said meniscus support member whereby development liquid may be supplied to said development surface, said aperture located sufficiently close to the entrance edge of said development surface to prevent solvent-vapor development of a migration imaging member, said development surface containing an electrode which biases the path of said imaging member which removes residual material from a developed imaging member, said electrode being positioned along said path of said imaging member after said aperture and before said exit edge of said development surface; and

means for providing a migration imaging member in the path spaced adjacent said development surface of said meniscus support member.

3,878,817
APPARATUS FOR PROCESSING ELECTROSTATIC IMAGES

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Information Systems, Inc., Bedford, Mass.

Filed Jan. 12, 1973, Ser. No. 323,108
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **14 Claims**



1. Apparatus for applying toner particles to an electrophotographic member whose photoconductive surface has a latent image thereon which comprises:

A. means for supporting said electrophotographic member with the photoconductive surface thereof arranged to receive liquid thereon,

B. a source comprising a container of toner particles suspended in a liquid which has an electrophoretic relationship with said particles, said container comprising collapsible but recoverable side walls and a foraminous rigid insulative top wall having a conductive coating on the exterior surface thereof, said exterior surface and conductive coating being of a configuration which is similar to the configuration of said photoconductive surface and being arranged parallel to and spaced from said phtoconductive surface, the foramina of said insulative top wall extending through said coating,

C. a source of electric potential connected to said conductive coating to bias the said conductive coating with respect to said photoconductive surface,

D. means on the exterior of the container capable of exerting force on the container to drive the toner suspension from the interior of said container through said foraminous top wall and conductive coating and against said photoconductive surface substantially simultaneously over the entire area of said surface to apply toner thereto by at least temporarily collapsing said side walls to reduce the interior volume of the container while a bias voltage is being applied to said conductive coating from said source of electric.

E. means for withdrawing into said container any excess suspension which remains, if any, after said toner has been so applied to said photoconductive surface, and

F. means on one of the electrophotographic member support and said top wall for confining the spread of suspension to the photoconductive surface of said electrophotographic member during application of said toner thereto and until withdrawal of any excess toner has been completed.

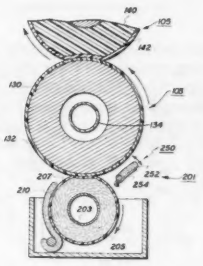
3,878,818
CLEANING APPARATUS FOR DRY FUSER ROLLS

Raghulinga R. Thettu, Webster, and Donald J. Quant, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 10, 1973, Ser. No. 387,409
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **3 Claims**

1. An improved cleaning apparatus for dry heated pressure roll fusing systems in which paper contaminants and toner particles on the dry fusing roll surface are removed, the improvement comprising:

a cleaning roll member including a soft elastomeric blanket having an outer sleeve positioned in contact with a fusing roll surface to attract paper contaminants and toner particles, and

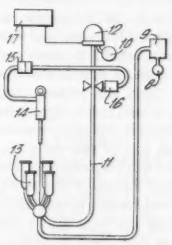


wiping means positioned to contact said fusing roll surface to scrub and loosen tiny paper contaminants and toner particles ranging in size from submicron to about **10** microns sticking on the dry fuser roll surface whereby said contaminants and toner particles can be removed onto said sleeve, said wiping means includes a pad member made of a heat resistant material urged into pressure contact with said fusing roll surface at a constant pressure.

3,878,819
MILKING MACHINERY CONTROL APPARATUS

Leonard Albert Harman, 30 Berwick St., Sydney, New South Wales-2161, Australia

Filed Oct. 31, 1973, Ser. No. 411,567
Claims priority, application Australia, Nov. 9, 1972, 1155/72
Int. Cl. A01j *7/00*
U.S. Cl. 119—14.08 **15 Claims**

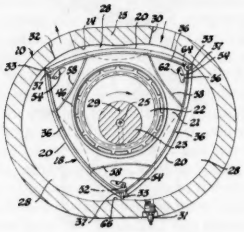


1. Milking machinery control apparatus comprising means positioned at a monitoring point in a milk conduit for monitoring discrete pulses of milk flowing from a cow, means producing a signal having electrical pulses corresponding to said pulses of milk flow, and means operating to discontinue milking upon the elapse of a predetermined time interval between successive electrical pulses of said signal.

3,878,820
ROTARY COMBUSTION ENGINE GAS SEAL ARRANGEMENT

Edward N. Cole, Bloomfield Hills, and Raymond P. Canale, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 15, 1974, Ser. No. 451,487
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.45 3 Claims

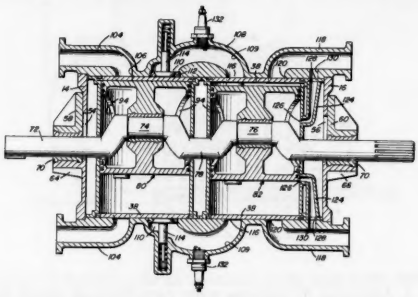


1. A rotary combustion engine comprising housing means having an interior multi-lobed peripheral wall and oppositely facing interior side walls defining a cavity, a crankshaft rotatably mounted in said housing means having an eccentric located in said cavity, a multi-apex rotor rotatably mounted on said eccentric having sides opposite said side walls and a plurality of peripheral faces opposite said peripheral wall, said rotor faces and said housing walls cooperating to provide a plurality of working chambers that are spaced about and move with said rotor within said rotor housing while varying in volume as said rotor planetates, gas seal means mounted on said rotor for sealingly contacting said housing walls to seal said working chambers from each other, said gas seal means including apex seal means mounted on each said rotor apex having a sealing surface sealingly contacting said peripheral wall and also having leading and trailing sides relative to the direction of rotor rotation, said housing means having air-fuel inlet passage means periodically opened to said working chambers by said rotor past said gas seal means as said rotor planetates, said housing means further having exhaust passage means periodically opened to said working chambers by said rotor past said gas seal means as said rotor planetates, a spark plug mounted on said housing means periodically exposed to said working chambers as said rotor planetates whereby with said engine structure air-fuel mixture is taken into said working chambers, compressed, ignited and then exhasted to effect powering of said crankshaft, a clean gas pressure supply a clean gas injection port in one of said side walls operatively connected to said clean gas pressure supply, a plurality of injection manifolds in said rotor corresponding to the number of rotor apexes, each said injection manifold having an orifice that extends through one of said rotor faces near the leading end of the associated working chamber and the trailing side of the leading apex seal means of this working chamber, each said injection manifold further having an inlet port in the rotor side opposite said one side wall that is periodically opened to said injection port as said rotor planetates, and said injection port and said inlet ports arranged so that their periodic connections start and end early during compression in the working chambers whereby clean gas is injected near the leading end of each working chamber at low compression pressures and is then trapped on the trailing side of the leading apex seal means of this working chamber by the natural movement of gases as the rotor continues to turn so that on continued compression and then combustion pressure increase whatever leakage occurs across the leading apex seal is confined to the injected clean gas rather then unburned air-fuel mixture.

3,878,821
COMBUSTION ENGINE WITH DOUBLE-ENDED PISTONS AND TRANSFER PASSAGES

Norman C. White, 2501 Bella Vista Ave., Martinez, Calif. 94553

Filed Nov. 15, 1973, Ser. No. 416,264
Int. Cl. F02b *75/40*
U.S. Cl. 123—61 R 8 Claims



1. A combustion engine including a block structure from which a crankshaft including a pair of axially spaced crankpin portions is journaled, a pair of cylinder assemblies guidingly supported from said block structure with said assemblies extending normal to the axis of rotation of said crankshaft and said assemblies mounted for guided lateral shifting transversely of said crankshaft, said cylinder assemblies including central opposite side peripherally extending slots through which axial portions of said crankshaft pass, a pair of double-ended pistons reciprocal in said cylinders and journaled on said crankpin portions, said cylinder assemblies each including opposite end walls through each of which inlet and outlet openings are formed, said block structure including opposing portions between and relative to which the opposite end walls of said cylinder assemblies are slidable, each of said opposing portions including (1) an intake port with which the corresponding inlet openings of one of said assemblies are registrable, (2) an exhaust port with which the corresponding outlet openings of the other of said assemblies are registrable, (3) and a combined compression, combustion and transfer passage including inlet and outlet ends with which the outlet and inlet openings of the corresponding end walls of said one and other cylinder assemblies, respectively, are registrable, each of said opposing portions of said block including volume varying means operative to adjustably vary the effective volume of the corresponding transfer passage.

3,878,822
MULTIPLE CAM MECHANISM FOR INTERNAL COMBUSTION ENGINES

Robert G. Beal, 3037 Washington Ave., Kansas City, Kans. 66102

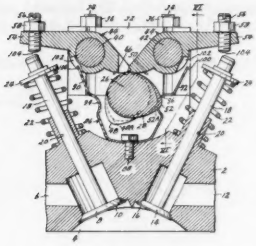
Filed Jan. 7, 1974, Ser. No. 431,400
Int. Cl. F01l *1/34*
U.S. Cl. 123—90.16 5 Claims

1. In an internal combustion engine including a series of cylinders each provided with an intake valve and an exhaust valve, and a crankshaft rotated by pistons movable in said cylinders:

a. a cam shaft rotatable by a driving connection thereof to said crankshaft,

b. a plurality of sets of cams, each cam constituting an eccentric formation on said cam shaft, said cams being spaced longitudinally along said cam shaft, said sets each including a series of cams associated respectively with each of said intake and exhaust valves, and the cams of each set being designed for best engine performance and efficiency under a different set of operating conditions,

c. a cam follower associated with each of said intake and exhaust valves, said cam followers being engageable respectively with the individual cams of any one of said sets of cams and each operable to open and close one of said valves in response to movement of its associated cam, each of said cam followers constituting a rocker arm pivoted on a rocker shaft extending parallel to an adjacent said cam shaft, and including a follower portion



engaging one of said cams to be rocked thereby to control the associated valve, said rocker shaft being longitudinally movable and said rocker arms being movable therewith, and

d. operating means operable to move said cam followers to engage any one of said sets of cams selectively, said operating means constituting mechanical means operable to move said rocker shaft longitudinally to move all of the rocker arms carried thereby.

3,878,823

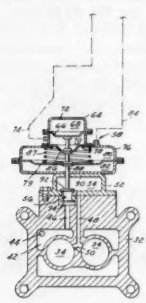
CARBURETOR VENTURI VACUUM AND ENGINE MANIFOLD VACUUM CONTROLLED EXHAUST GAS RECIRCULATING

Richard D. Vartanian, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 24, 1973, Ser. No. 400,281

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **1 Claim**



1. An exhaust gas recirculating system for an internal combustion engine having a carburetor induction passage containing a venturi, comprising a duct connecting the exhaust gases to the engine intake manifold, and a speed and load responsive valve means movable by the differential force between engine manifold vacuum and an amplified carburetor venturi vacuum operatively acting on the valve to open the duct whenever amplified venturi vacuum exceeds manifold vacuum, a servo means for moving the valve, the servo having a first flexible diaphragm dividing the servo into a venturi vacuum chamber and an ambient air pressure chamber, a second flexible diaphragm further dividing the servo means into a manifold vacuum chamber in back-to-back relationship to the venturi vacuum chamber and a second ambient air pressure chamber, a third flexible diaphragm between the manifold and venturi vacuum chambers, and means connecting the diaphragms to the valve, the diaphragms being so constructed and arranged in effective area that the venturi vacuum acting against the diaphragms is amplified whereby an increase of the amplified venturi vacuum to a level exceeding the manifold vacuum moves the valve to open the duct.

3,878,824

INTERNAL COMBUSTION ENGINE MAGNETO IGNITION SYSTEM OF THE SHUNT SWITCH TYPE

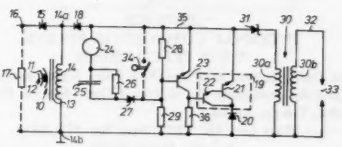
Georg Haubner, Berg; Walter Hofer, Schwabach, and Karl-Günter Schwarz, Altenberg, all of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Nov. 19, 1973, Ser. No. 417,221

Claims priority, application Germany, Nov. 29, 1972, 2258288

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **16 Claims**



1. An ignition system for an internal combustion engine comprising:

a magneto generator having a permanently magnetized rotor driven by said engine and an armature provided with a generator winding arranged for excitation by said rotor;

an ignition coil having primary and secondary windings;

at least one spark plug connected in circuit with said secondary winding;

said primary winding being connected in circuit with said generator winding at least at the ignition timing moment; semiconductor switching means connected in parallel to said generator winding arranged to be switched from its conducting to its non-conducting state at said ignition timing moment;

said semiconductor switching means comprising a first switching device of the semiconductor type (**19**) having a switching path and a control path and a second switching device (**31**) connected with said first switching device and said primary winding (**30***a*) of said ignition coil (**30**) in such a way that upon the switching of said first switching device to its non-conducting state said second switching device (**31**) is switched from its non-conducting to its conducting state.

3,878,825

SWIRL INDUCING POPPET VALVE

Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

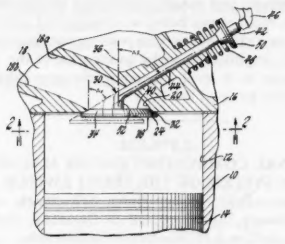
Filed Sept. 28, 1973, Ser. No. 401,646

Int. Cl. F22b *5/00*

U.S. Cl. 123—188 M **4 Claims**

4. A reciprocating type poppet valve comprising a valve head constituted as a body of revolution about an axis with its opposite end surfaces defining a valve face and a valve back, said valve head having an annular bevelled seating portion around the peripheral rim thereof adjacent to said valve back, and a valve stem rigidly fixed to said valve head and extending from said valve back at an acute angle relative to the axis of said valve head, said angle being no greater than the bevel angle of said seating portion, said valve stem having a straight

cylindrical portion of substantial length extending from its free end whereby said valve stem is adapted to be reciprocably

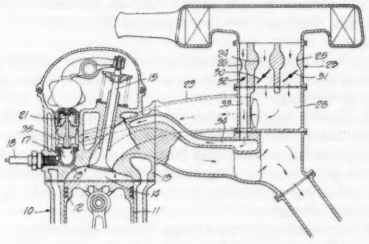


journalled in a stem guide bore in the cylinder head of an engine.

3,878,826
INTERNAL COMBUSTION ENGINE WITH PRECHAMBER

Tasuku Date, Tokyo, and Yasuhito Sato, Kamifukuoka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 16, 1973, Ser. No. 379,841
Int. Cl. F02b *19/00*
U.S. Cl. 123—32 ST **4 Claims**



1. In a multi-cylinder four-cycle internal combustion piston engine having a plurality of duplicate main combustion chambers each having one wall thereof formed by a piston, a plurality of duplicate auxiliary combustion chambers, and a plurality of duplicate torch nozzles each connecting an auxiliary combustion chamber to a main combustion chamber, respectively, the improvement comprising, in combination: means including passage means for delivering a lean mixture to all of the main combustion chambers, means including a passage for delivering a rich mixture to all of the auxiliary combustion chambers, all of the auxiliary combustion chambers receiving rich mixture from the same venturi passage, each torch nozzle having an effective cross sectional area relating to the cross sectional area of the venturi passage according to the following formula:

$F_t > F_r/K_{(n)}$

where

F_t = cross sectional area of one torch nozzle

$K_{(n)}$ = suction overlap coefficient

= 1.0 for four or less cylinder engines

= 1.0 for six cylinder engines

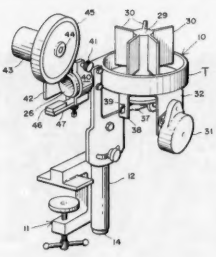
= 1.4 for eight cylinder engines

F_r = effective cross sectional area of the venturi passage.

3,878,827
TABLE TENNIS BALL SERVING APPARATUS

Joseph E. Newgarden, Jr., 10931 Griffing Blvd., Miami, Fla. 33161

Filed Oct. 24, 1973, Ser. No. 409,282
Int. Cl. F41b *15/00*
U.S. Cl. 124—1 **3 Claims**

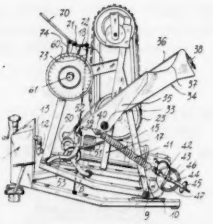


1. A table tennis ball serving apparatus comprising a hopper for containing table tennis balls, a nozzle mounted on said hopper, ball feeding means mounted in said hopper in proximity of the inner end of said nozzle for feeding balls to said nozzle, means operating said ball feeding means, a rotatable collar mounted on said nozzle, locking means for said collar, a ball engaging wheel and pad mounted on said collar, said wheel and said pad positioned in coplanar relation with the axis of said nozzle and in opposing relationship, being on each side of said nozzle at an outer end thereof for receiving and engaging balls passing through said nozzle, power means for rotating said wheel and means for adjusting the distance between said pad and said wheel.

3,878,828
DEVICE FOR LAUNCHING BALL WITH VARYING TRAJECTORIES

Dornetti Francesco, Via Duca D'Aosta 6, 26025 Pandino (Cremona), Italy

Filed July 15, 1974, Ser. No. 488,391
Claims priority, application Italy, July 18, 1973, 26747/73
Int. Cl. F41b *7/00*
U.S. Cl. 124—16 **10 Claims**



1. A device for ball launching in sports training, the device comprising; a supporting structure movably mounted on wheels and having at least two spaced apart tracks mounted rearwardly thereof; a frame means bearing on said tracks and adapted to be rotated with respect to the supporting structure; a ball magazine mounted on said frame means; a pivotally mounted ball propelling club mounted on said frame means; upright members mounted on said frame means for supporting said magazine and said club; means mounted on said frame means for rotatably engaging and disengaging said ball propelling club to pivot the club to a cocked position and then release same so that the club may propel a ball; spring means

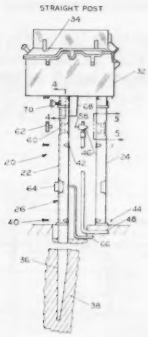
for biasing the pivoted club from a cocked position to a ball propelling position; means for cyclically biasing the spring means so as to vary the tension of the spring means; and motor means for operating said cyclically biasing means and for rotating said frame means with respect to the supporting structure.

3,878,829

BARBEQUE POST

John S. Schantz, Marine, Ill., assignor to Raymond G. Schantz and Socrates J. Schantz, both of Marine, Ill., part interest to each

Filed July 5, 1974, Ser. No. 485,917
Int. Cl. A47j *37/00*
U.S. Cl. 126—41 R **9 Claims**



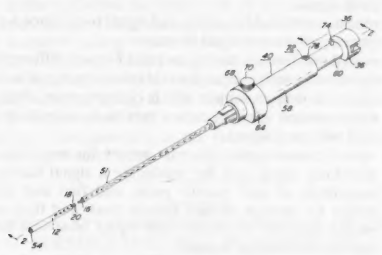
1. A gas-fired barbeque having a barbeque pit and a support post said support post comprising a pair of axially split tubular post halves supporting said pit, said post halves having means for clamping together and opposed bracket members on the interior of each of said post halves engageable with a gas valve to hold it in clamped position when the post halves are clamped together.

3,878,830

CATHETER SYSTEM FOR BLOOD GAS MONITORING

Haim I. Bicher, Charleston, S.C., assignor to Mediscience Technology Corporation, Collingswood, N.J.

Filed May 31, 1973, Ser. No. 365,431
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 E **15 Claims**



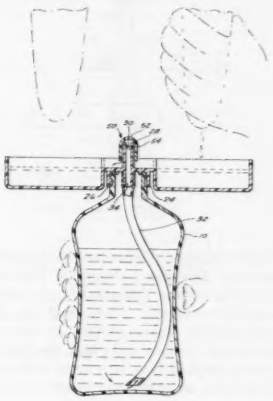
1. A polarographic sensing means for a fluid system comprising a body, first and second electrical conductors insulated from each other and supported by said body and each respectively having an exposed conducting surface at a region of said body, a deactivated electrolytic material supported by said body at said region in contact with the exposed surfaces of said first and second conductors, and a membrane supported by said body extending over the region of said body and covering said electrolytic material, said membrane being pervious to oxygen in the fluid system and semi-pervious to water.

3,878,831

DISPENSING DEVICE FOR TESTING COWS FOR MASTITIS

Eli A. Zackheim, Norwick, Conn., assignor to Jules Silver, Norwich, Conn.

Filed June 20, 1974, Ser. No. 481,548
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 F **12 Claims**



1. An open top dispensing device adapted to be secured to the open neck of the flexible container having a supply of liquid therein, said device comprising a plate having centrally located means integrally formed therewith for securing the plate to the open neck of the container and a plurality of open top cups formed therein about said centrally located means and adapted to contain liquid therein; a conduit formed integrally with said plate and extending through said centrally located means to a free end located at a position above the plate, said conduit having a bore therein to permit passage of liquid from said container into said cups; a cap surrounding the free end of the conduit above the plate; said conduit having a recess portion formed therein on its exterior surface above the plate thereby to provide, between the conduit and cap, a path for liquid in the container forced therefrom by squeezing pressure, said cap serving to direct said liquid from the bore of the conduit along said path towards the plate; said plate having a plurality of channels formed therein extending from said conduit to said cups to distribute fluids from said path to said cups.

3,878,832

METHOD AND APPARATUS FOR DETECTING AND QUANTIFYING CARDIOVASCULAR MURMURS AND THE LIKE

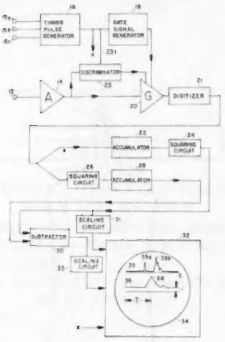
E. Glenn Tickner, Mountain View, and David G. Boyers, Palo Alto, both of Calif., assignors to Palo Alto Medical Research Foundation, Palo Alto, Calif.

Filed May 14, 1973, Ser. No. 359,658
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 S **9 Claims**

1. The method of analyzing cardiovascular sounds of the body comprising the steps of:

a. detecting the sound signals produced repetitively from a source within the body;

b. detecting a periodic condition in the body synchronous with said repetitively produced sound signals;
c. synchronizing the detected sound signals with said periodic condition in the body synchronous with said detected sound signals;
d. squaring said detected sound signals without filtering said detected sound to produce a data signal representative of the sound power of the detected signals;
e. averaging a plurality of said squared sound signals over a plurality of successive time periods to obtain an average of the sound power of the composite signal for each point in the cardiac cycle;



f. averaging a plurality of said detected sounds over a plurality of successive time periods to obtain an average of the detected signal amplitude for each point in time in the cardiac cycle;
g. synchronizing the averaging of the detected sounds with said periodic condition in the body synchronous with said detected sound signals;
h. squaring said average of the detected sounds to produce a sound data signal representative of the second power of the heart sound signal;
i. subtracting the result of step (h) from the result of step (e);
j. displaying the result from step (i);
k. displaying the result from step (h).

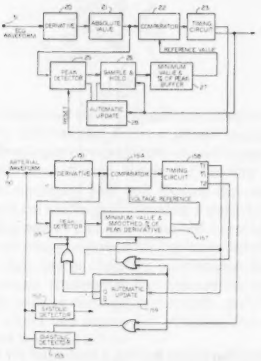
3,878,833

PHYSIOLOGICAL WAVEFORM DETECTOR

Harold N. Arneson, Oak Creek, and Louis J. Heitlinger, Waukesha, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,408
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 A **27 Claims**

9. A device for detecting R-wave of an ECG waveform signal in the presence or absence of other signals by determining the magnitude and predetermined slope of the R-wave signals to the exclusion of other signals, comprising:
a. means for differentiating said waveform signal which produces negative going and positive going signals,
b. means for converting said signals to signals representative of their absolute values,
c. comparator means for comparing said absolute value of said differentiated signals with a reference signal, said comparator means undergoing an output signal change in response to the absolute value of said differentiated signals being greater than the magnitude of said reference signal, said greater signal being a criteria for waveform signals of interest as well as for other signals,
d. means for detecting the peak of said absolute value signal including first means and second means for storing said peak signal,
e. switch means selectively operative to transfer said peak signal from said first to said second storage means,
f. means controlled by said second signal storage means to produce a signal representing a predetermined percent of said peak signal magnitude, said last named signal constituting said reference signal,
g. time measuring means responsive to said comparator means undergoing an output signal change by measuring the time interval during which said change exists, said time measuring means being responsive to it measuring a



predetermined interval by continuing to measure a second time interval, and said switch means being operative to transfer said peak signal in response to said measuring means measuring said second time interval.

19. A device for determining in a blood pressure waveform signal the peak and valley representative of systolic and diastolic blood pressure by detecting the systolic upslope of the waveform signal, comprising:
a. means for receiving and differentiating said waveform signal and producing a differentiated signal corresponding with said upslope,
b. means for detecting the minimum magnitude of said differentiated signal and means for storing said minimum peak signal,
c. means controlled by said stored signal to produce a reference signal proportional thereto,
d. comparator means having an input for said differentiated signal and another input for said reference signal and said means having an output which changes state when said differentiated signal becomes greater in magnitude than said reference signal,
e. systolic peak signal detector means for receiving said waveform signal and for producing a signal having the magnitude of said systolic peak, and first and second means for storage of said systolic peak and first switch means operable to transfer said signal from said first to said second storage means,
f. diastolic valley signal detector means for receiving said waveform signal and for producing a signal having the magnitude of said diastolic valley, and first and second means for storage of said valley signal and second switch means operable to transfer said valley signal from said first to said second storage means,
g. time measuring means responsive to said comparator means changing state by measuring the time interval

during which said differentiated signal has a greater magnitude than said reference signal,

h. means for actuating said timing means to continue measuring time for a second interval in response to said measured interval exceeding a predetermined interval, which predetermined interval is indicative of a systolic upslope having occurred, and

i. means for operating said first and second switching means to transfer said peak and valley signal to said first and second storage means, respectively, at the completion of said second interval, said transferred signal, respectively, corresponding with systolic and diastolic blood pressure.

3,878,834

BLOOD PRESSURE RECORDER

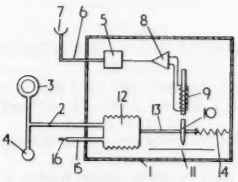
Leslie George Sanderson, Cambridge, England, assignor to Cambridge Scientific Instruments Limited, Cambridge, England

Continuation-in-part of Ser. No. 260,745, June 8, 1972, abandoned. This application Mar. 12, 1974, Ser. No. 450,393

Claims priority, application United Kingdom, July 23, 1971, 34767/71

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 M **8 Claims**



1. A blood pressure recorder comprising an inflatable occluding cuff, means for inflating the cuff, bleed valve means for allowing controlled leakage of air from the inflated cuff, sound detecting means including a cup adapted to be placed over an artery to be occluded by the cuff, a microphone and a flexible tube connecting the cup to the microphone so that the microphone can detect Korotkoff sounds in the artery and amplifying means for amplifying the output of the microphone thereby to generate an electrical output signal whose magnitude is dependent on the amplitude of the Korotkoff sounds, and pressure measuring and recording means connected to the cuff and including electrical circuitry receiving the output signal from the amplifier, the pressure measuring and recording means being operable to record an indication of the pressure in the cuff when the magnitude of the output signal from the amplifying means passes through a predetermined value, said sound-detecting means being operatively arranged to provide a sensitivity to Korotkoff sounds such that the magnitude of the said electrical output signal is greater at a frequency corresponding to the frequency of the Korotkoff sounds at pressures above the diastolic pressure than at a frequency corresponding to the frequency of the Korotkoff sounds at pressures below the diastolic pressure.

3,878,835

CHUCKING ATTACHMENT FOR INSERTION OF A FINE FLEXIBLE TUBE INTO AN ENDOSCOPE

Mikio Utsugi, Hachioji, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

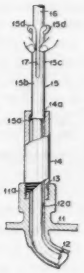
Filed Feb. 22, 1974, Ser. No. 444,989

Claims priority, application Japan, Feb. 24, 1973, 48-23796

Int. Cl. A61b *1/00*

U.S. Cl. 128—4 **12 Claims**

1. In an endoscope having an outer tubular, flexible duct for insertion into the body, a fine flexible tube within said outer duct, and means for inserting said fine tube into said outer duct, the improvement in said means comprising, a cylindrical guide means disposed at the inlet opening of said outer duct to guide within a prescribed range said fine flexible tube as it is introduced into said duct; a cylindrical body slidably fitted into said guide means and having a rigid portion thereof slidably abutting against the outer wall of said fine flexible tube for guiding the same and a flexible portion thereof positioned



on said cylindrical body and radially flexible when depressed by the fingers, thereby enabling pinching said fine flexible tube when inserted into the flexible portion of said cylindrical body, whereby said fine flexible tube is forced stepwise into the endoscope outer duct by repeatedly sliding said cylindrical body member through said guide means and also repeatedly causing said flexible portion of said body to pinch said fine flexible tube inserted thereinto and to be released therefrom.

3,878,836

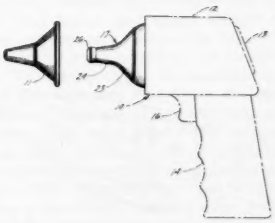
DISPOSABLE SPECULUM FOR TYMPANIC THERMOMETER

Max E. Twentier, Phoenix, Ariz., assignor to Products International Marketing, Phoenix, Ariz.

Filed Aug. 23, 1973, Ser. No. 390,687

Int. Cl. A61b *1/22*

U.S. Cl. 128—9 **8 Claims**



1. A disposable speculum for use with a speculum retainer having a generally conical tip with a peripheral enlargement thereon comprising:

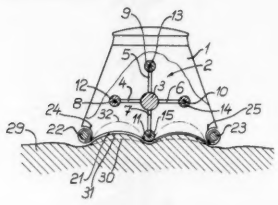
a generally conical sheath of elastically stretchable plastic having a relatively larger open end and a relatively smaller open end;

an elastically stretchable portion adjacent the relatively smaller open end having sufficient strength and elasticity to be installed on a speculum retainer at least once and sufficiently susceptible to stress cracking to spontaneously rupture during no more than a few minutes retention on the speculum retainer with the stretchable portion on the enlargement.

3,878,837
MASSAGING APPARATUS

Winfried Jean Werding, Lausanne, Switzerland, assignor to Gerwi A.G., Engelburg/SG, Switzerland

Filed Dec. 6, 1972, Ser. No. 312,704
Claims priority, application Switzerland, Dec. 10, 1971, 018006/71
Int. Cl. A61h 15/00
U.S. Cl. 128—57 5 Claims

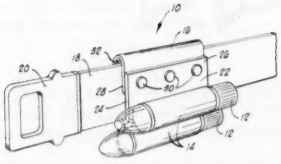


1. A massaging apparatus comprising;
a support having a rim which defines an open face of the support; the support defining a rotor axis;
a sheet mounted on said rim and extending across said open face, said sheet being a laminate including two relatively thin layers of an elastically expansible material and a relatively thick layer of an elastically compressible material between said two relatively thin layers; and
rotor means mounted in the support for rotation about said rotor axis to move into contact with, and roll over, successive portions of said sheet and thereby to appiy massaging effects.

3,878,838
SEAT BELT VIBRATOR

David L. Lunn, 920 N.W. 28 St., Moore, Okla. 73160

Filed Dec. 5, 1973, Ser. No. 421,845
Int. Cl. A61h 7/00
U.S. Cl. 128—63 8 Claims

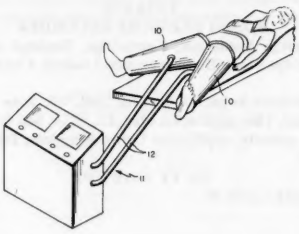


1. In a seat belt assembly, the improvement comprising:
a portable battery-operated vibrator; and
means for securing said vibrator to the seat belt, said means comprising a strap having an inside portion, an outside portion, a first end portion, and a second end portion, said strap being wrapped around the seat belt with the inside portion of said strap adjacent thereto, and means for securing the first end portion and the second end portion together, the outside portion of said strap having compartment means for holding said vibrator adjacent to the seat belt.

3,878,839
CARDIAC ASSIST APPARATUS

Robert L. Norton, Norfolk, Mass., and William C. Birtwell, North Scituate, R.I., assignors to Hemodyne, Inc., Norfolk, Mass.

Filed Feb. 15, 1973, Ser. No. 332,629
Int. Cl. A61h 7/00
U.S. Cl. 128—64 29 Claims



9. apparatus for providing external assistance for the circulation of blood in a patient comprising
substantially rigid housing means having a substantially fixed volume for enclosing a portion of said patient's body, said housing comprising
a pair of hingedly connected portions pivotally movable relative to each other from an open to a closed position;
means for clamping said portions together in said closed position;
means for cyclically applying pressure to said body portion within said housing means, said pressure applying means including
a closed pneumatic pressure actuation means;
a pressure medium, at least a portion of which is in gaseous form, enclosed in a flexible sealed member which is pressure expansible, at least a part of said sealed member being in contact with said body portion, and positioned between said pressure actuation means and said portion of the patient's body, said pressure medium being responsive to said pneumatic pressure actuation means to apply pressure to said body portion; and
means for synchronizing the operation of said pressure actuation means to apply said pressure cyclically to produce alternating compression and decompression of said body portion in synchronism with said patient's heartbeat.

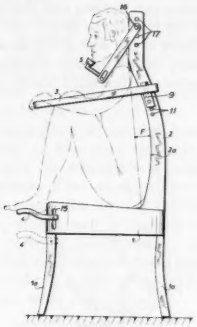
3,878,840
ORTHOPEDIC CHAIR

Jean Esbelin, Chemin de Jacquetieres, Beynost 01700, France

Filed Aug. 22, 1973, Ser. No. 390,421
Claims priority, application France, Sept. 1, 1972, 72.31646
Int. Cl. A61f 5/00
U.S. Cl. 128—70 13 Claims

1. An orthopedic chair comprising means including a seat for supporting a user in a fetal position with his legs folded against his chest, and an upright support on said seat provided with a concave curved surface for being in intimate contact

with and supporting the spinal column of the user substantially over the length thereof with the user in said fetal position, said



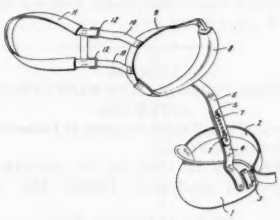
upright support having a narrow width such that only the spinal column of the user is supported thereby.

3,878,841

ADJUSTABLE SUPPORTIVE AND DYNAMIC ORTHOTIC DEVICE

Raul Villanueva, 7006 Lacy Hill, Houston, Tex. 77036

Filed Nov. 12, 1973, Ser. No. 414,840
Int. Cl. A61f *5/02*
U.S. Cl. 128—78 **6 Claims**



1. An adjustable supportive and dynamic orthotic device, a pelvic mold, a half crutch, a strut extending from said mold, said strut having two distinct angles the lower end of the strut being angled outwardly from said mold and the upper end of the strut being angled outwardly from said half crutch for delivering an upward and backward thrust, said half crutch supported by said strut and selectively adjustable to lift and maintain pressure over the tendon of the pectoral muscle in an upward and backward thrust to maintain the shoulder of a user in normal position.

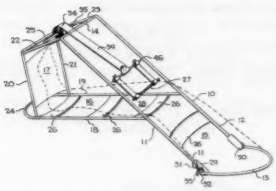
3,878,842

TRACTION APPLIANCE PERMITTING MOBILITY

David P. Goldberg, 1965 Lincoln Ave., Saint Paul, Minn. 55105

Filed Sept. 10, 1973, Ser. No. 395,409
Int. Cl. A61f *3/00*
U.S. Cl. 128—84 C **11 Claims**

1. An appliance for applying a substantially constant degree of traction to an injured body member while permitting comfort movement of the body member per se with respect to the appliance and while permitting bed-free mobility for the wearer thereof, said appliance comprising (i) an elongated rigid skeletal base frame comprising at least two spaced-apart substantially parallel elongated members adapted to permit said injured body member to be located therebetween and bracing means connected to each of said elongated members for holding said elongated members in said spaced apart relationship, said elongated members being adapted to be placed in comfort alignment longitudinally and externally to a body member having an injured part, said base frame and said entire appliance being free of elements which prevent relative longitudinal movement of said body member within said base frame and free of elements which prevent movement of said base frame as a unit with said injured body member as said injured body member is moved voluntarily by the wearer of said appliance, (ii) means for maintaining said substantially parallel elongated members in said comfort alignment on opposite sides of an injured body member, (iii) first and second thrust members longitudinally spaced from each other for acting upon spaced first and second thrust-receiving body parts located on opposite sides of an injured part of said injured body member, said first and second thrust members being at spaced locations substantially aligned lengthwise with said elongated base frame, at least said first thrust member being movable with respect to said base frame in a direction substantially aligned lengthwise with said base frame, said second thrust member being fixed in position with respect to said base frame, (iv) spring tractive means for maintaining said first and second thrust members under a predetermined



substantially constant divergent tractive force during longitudinal shifting of said injured body member within said elongated base frame, even including any such longitudinal shifting as may involve a change in specific location of a thrust-receiving body part and as may simultaneously involve an alteration of the relative longitudinal spacing distance between said thrust members, whereby the divergent tractive force acting on opposite sides of the injury of said body member is maintained at said predetermined substantially constant condition during longitudinal shifting of said body member within said base frame, said spring tractive means being mounted on said appliance for operable linkage between said first thrust member and a mounting part for said spring tractive means fixed substantially intermediate said elongated members of said elongated base frame, said spring tractive means consisting essentially of a substantially constant force concentrically coiled metal band freely rotatable as a unit about the axis of the coil thereof without substantially building up or lowering the forces stored in the coil thereof, said band being tightly coiled in its natural state and being characterized by exhibiting a substantially constant force toward coiling as any length of the outer end of it is moved from and toward said coil, and (v) an operable linkage connecting said first thrust member to said spring tractive means for applying said divergent tractive force.

3,878,843

SURGICAL DRAPE WITH EDGE GRIPS AND METHOD

Burton D. Morgan, Stow, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

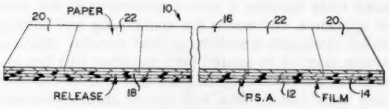
Filed Dec. 22, 1972, Ser. No. 317,543
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D **5 Claims**

4. A surgical laminate comprising

a plastic film having a layer of pressure sensitive adhesive thereon,

a pair of parallel strips of a paper cover means on each of a pair of opposed margins of said film and removably adhesively attached thereto, and

a cover sheet for the center portion of said film removably attached to said adhesive layer, said cover means and cover sheet having adjacent edges which are abutted, the inner one of each of said parallel strips being removable to expose part of said adhesive layer so that opposed



edges of the laminate can be folded over on themselves to engage the exposed part of said adhesive layer to provide a plural laminate thickness at marginal portions thereof to form opposed grip areas whereby the laminate can be grasped by said grip areas and be attached to a person by said adhesive layer after said cover sheet has been removed.

3,878,844

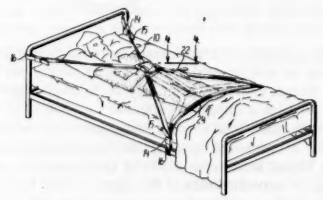
BODY RESTRAINER

William Raymond Tobias, 2248 Colony Rd., Charlotte, N.C. 28209

Filed Dec. 12, 1973, Ser. No. 424,055

Int. Cl. A61f *5/37*

U.S. Cl. 128—134 **6 Claims**



1. A body restrainer comprising a pair of crossed flexible belts fastened together near the midpoint of their lengths, said belts having quick engagement-quick release buckles attached to each end thereof, anchoring means for engagement with said buckles, said buckles having means for engaging and locking with said anchoring means, said belts additionally having arm restraining loops fastened along the length thereof for the insertion of an arm or wrist, said loops being readily tightened by drawing the loop closed through quick engagement-quick release buckle means.

3,878,845

METHOD FOR SEXUAL RESTRAINT OF A BULL

Lewis C. Schacht, 5009 Vernon, Tallahassee, Fla. 32301

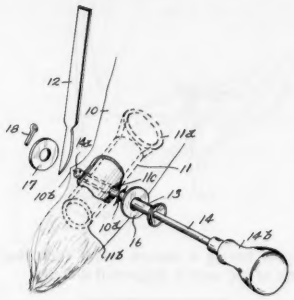
Filed Jan. 21, 1974, Ser. No. 435,265

Int. Cl. A61t *5/37*

U.S. Cl. 128—138 **2 Claims**

1. A method of detecting estrus in cows comprising the steps of inserting a blocking member in the sheath of a bull, securing the blocking member in place by means of a pin passing through the walls of the bull's sheath and the blocking member, and placing the bull with one or more cows, and detecting mounting of a cow by the bull as an indication of estrus in that cow.

2. A method of installing a tubular blocking tube having a transverse opening therein in the sheath of a bull comprising the steps of inserting the tubular blocking tube in the bull's sheath, manually locating one side of the transverse opening in the sheath by feeling the outside of the bull's sheath, making an incision in the wall of the sheath corresponding to the one side of the transverse opening, inserting a pointed rod through a hollow pin having one flanged end, flanged end first, inserting the pointed rod having the hollow pin contained thereon through the incision in the wall of the sheath and through the transverse opening in the tubular blocking tube so that the point of the pointed rod distends a portion of the opposite side



of the sheath wall, making an additional incision in the opposite side of the sheath wall at the portion thereof distended by the pointed rod, sliding the hollow pin along the pointed rod so that its nonflanged end passes through the sheath wall incision, the transverse opening in the blocking member and the additional sheath wall incision, and installing a washer and a retaining device on the nonflanged end of the hollow pin whereby the pin is fixed to the sheath walls and the blocking tube is held in place by the pin.

3,878,846

HYPODERMIC SYRINGE WITH PARTS DISPOSABLE AFTER USE

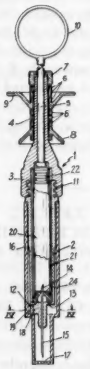
Henri Rimbaud, Paris, France, assignor to Laboratoire SPAD, Quetigny-les-Dijon, France

Filed Nov. 22, 1972, Ser. No. 308,844

Claims priority, application France, Dec. 13, 1971, 71.44606

Int. Cl. A61m *5/24, 5/22*

U.S. Cl. 128—218 DA **4 Claims**



1. A hypodermic syringe comprising:

a syringe head including a tip having an axial bore extending therethrough,

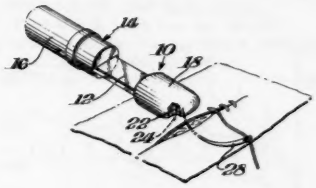
a hollow sterile syringe body connected to said head,
a rod slidably mounted in said bore in said head and including a portion extending externally of said head,
a gripping element fixed to said portion of the rod extending externally of the head,
a counter-gripping element, means mounted on said head for adjustably securing said counter-gripping element thereto in an axially adjustable position with respect to said gripping element on said rod,
means in said body for storing an injectible solution and operated by displacement of said rod,
and means for dispensing said solution from said body,
said tip comprising an elongated sleeve in which the rod slides, said means for adjustably securing said gripping element comprising a set of rings stacked on the said sleeve, locking means for locking the rings in the axial direction fitted at one end of the sleeve, said counter-gripping element being constituted by a disc interposed between two rings of said set of rings, said locking means being demountable to enable the disc to be interposed between any two other rings.

3,878,847
MEMBRANE STOMA SEAL FOR OSTOMY PATIENTS
Arthur E. Marsan, El Paso, Tex. 79912
Filed Mar. 11, 1974, Ser. No. 449,628
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **11 Claims**

1. A membrane for use as a stoma seal for a pouch in ostomy conditions, the membrane comprising a sheet of extremely thin material having a high degree of elasticity and a thinness functioning as of approximately about one thousanth of an inch to ten thousanths of an inch throughout its area, a means for embracing and sealing the stoma comprising an opening in its center for receiving the stoma, said opening being smaller in diameter than the diameter of the stoma to which the membrane is to be applied and defining a band-like means around the stoma when applied thereto so that the membrane maintains a seal with the outer circumference of the stoma wall completely around the stoma.

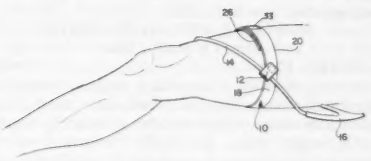
3,878,848
SURGICAL NEEDLE CAPTURING DEVICE
Clement A. Hiebert, Portland, Maine, assignor to Extracorporeal Medical Specialties Inc., King of Prussia, Pa.
Filed Dec. 27, 1973, Ser. No. 428,671
Int. Cl. A61b *17/04*
U.S. Cl. 128—334 R **11 Claims**

1. A surgical needle capturing device comprising a handle member, one end of said handle member being adapted for securement to a manipulating element, a body member, the other end of said handle member being attached to said body member, said handle member being of sufficient stiffness to transmit manipulations of said handle member to said body member whereby said body member may be manipulated in a controlled manner by manipulating said handle member, said body member being a solid block adapted to rest against a vessel wall and having sufficient resistance to be penetrated by



a surgical needle passing through the vessel wall and to then grip the needle whereby manipulation of the handle member results in manipulation of the needle, including tissue anchoring means on said body member for stabilizing the tissue while the surgical needle penetrates the body member, and said tissue anchoring means including a plurality of pins having points projecting from said body member.

3,878,849
SURGICAL TUBE SUPPORTER
Clara L. Muller, and William F. Muller, both of Lot 1003, 14099 S. Belcher Rd., Largo, Fla. 33540
Filed Dec. 17, 1973, Ser. No. 425,137
Int. Cl. A61m *25/02*
U.S. Cl. 128—349 R **10 Claims**



1. A therapeutic appliance for securing a tube, or the like, along a patient's body member, the appliance comprising a flexible elastic strap for encircling the body member, fastener means spaced apart along the strap for releasably securing the strap about the body member, means in the form of a yieldable layer having a high friction surface extending along one face of the strap for effectively the entire length of the strap between the fastener means for firmly engaging the body member and retaining the strap in place along the body member with sufficiently light pressure exerted by the strap that there is substantially no appreciably constriction of the body member by the strap, said means further comprising a raised pattern on said surface for more secure engagement of the body member by the appliance, and means comprising a retainer operatively associated with the strap for receiving and retaining the tube.

3,878,850
SMOKING MIXTURE

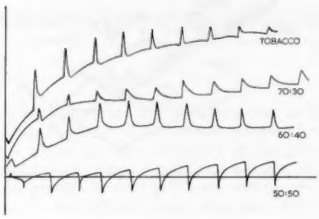
James Gibson, and Colin James Webster, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 24, 1972, Ser. No. 283,290

Claims priority, application United Kingdom, Sept. 8, 1971, 41921/71

Int. Cl. A24b *15/00*

U.S. Cl. 131—2 **4 Claims**



1. A smoking mixture comprising a smoke-producing substrate containing a modified carbohydrate and fortified by nicotine, said mixture containing also lactic acid present in a quantity sufficient to reduce the chokiness or choky flavor effect of the smoke as caused by the nicotine fortification, the quantity of said acid being no more than twice the proportion by weight of the nicotine and the modified carbohydrate being the product obtained by catalytic thermal degradation of carbohydrate at a temperature above 100°C until the weight of the degraded carbohydrate is less than 90 percent of the weight of the original carbohydrate.

3,878,851
TOBACCO CASING MATERIAL

Andrew G. Kallianos; Lee G. Veasey, Jr., and Albert H. Warfield, all of Durham, N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,130

Int. Cl. A24b *15/04*

U.S. Cl. 131—17 R **9 Claims**

1. A tobacco product comprising tobacco blended with a casing solution comprising flavor enhancers, humectants and a hydrolysate comprising a mixture of reducing sugars, said reducing sugars being principally comprised of xylose, wherein said hydrolysate is produced by acid hydrolysis of a naturally accuring xylan-containing material.

3,878,852
CIGARETTE TRANSFER ASSEMBLY

Floyd Van Hall, Durham, N.C., assignor to Liggett & Myers Incorporated, New York, N.Y.

Filed Feb. 28, 1974, Ser. No. 446,926

Int. Cl. A24c *05/35*

U.S. Cl. 131—28 **10 Claims**

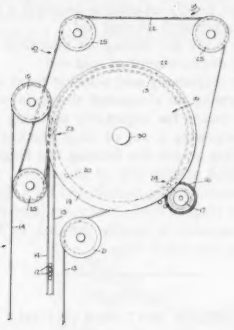
1. In a cigarette transfer assembly,

a rotatable transfer drum for moving a continuous stream of cigarettes from a receiving position to an ejection position, said stream being composed of individually spaced apart cigarettes,

means for retaining said stream of cigarettes on said transfer drum between said positions;

a roller positioned adjacent said drum at said ejection position, said roller having a friction surface thereon for engaging the cigarettes of said stream; and

means for rotating said roller at a greater speed of rotation than said drum to cause each cigarette in said ejection position to be rolled on said drum prior to ejection.



3,878,853
CIGARETTE FILTERS FOR THE SELECTIVE REMOVAL OF CILIATOXIC SMOKE COMPONENTS

Menzie Lipson, Highton, Victoria; Robert John Mayfield, Newtown, Victoria, and Irene Mary Morgan, Grovedale, Victoria, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Aug. 7, 1973, Ser. No. 386,325

Claims priority, application Australia, Aug. 16, 1972, 109/72

Int. Cl. A24f *7/04*; **A24b** *15/02*

U.S. Cl. 131—262 A **26 Claims**

1. A method for producing a tobacco smoke filter which will selectively remove ciliatoxic smoke components, which method comprises forming an aqueous solution containing a non-volatile polyamine component having a molecular weight in excess of 500 and a cationic component which contains one or more quaternary ammonium functional groups per molecule, and having a proportion by weight of cationic component to polyamine component of from 10:1 to 1:10; and treating a filter material with said solution to deposit an amount of each of said cationic and polyamine components from 1 to 30% by weight of said filter material.

8. A method as claimed in claim 6, wherein the polyamine is a poly(ethylenimine) or poly(vinylamine).

3,878,854
RETENTION CAPACITY OF CIGARETTE FILTERS

Klaus Albein, Denzlingen; Dieter Imbery, Mundingen, and Hanspeter Oesterle, Waldkirch, all of Germany, assignors to Deutsche Rhodiaceta AG, Freiburg im Breisgau, Germany

Filed May 31, 1973, Ser. No. 365,587

Claims priority, application Germany, June 5, 1972, 2227291

Int. Cl. A24f *7/04*

U.S. Cl. 131—266 **4 Claims**

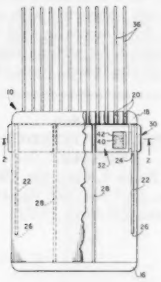
1. A filter for cigarettes which comprises cellulose acetate fibers powdered with aluminum oxide trihydrate hydrargillite of specific surface 4 – 15 m^2/g, comprising more than 80% crystalline monoclinic-pseudohexagonal platelets.

3,878,855

DEVICE FOR COMBING OR PICKING HAIR

George Ransaw, 8059 S. Merrill Ave., Chicago, Ill. 60617

Filed Oct. 4, 1973, Ser. No. 403,523
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 5 Claims



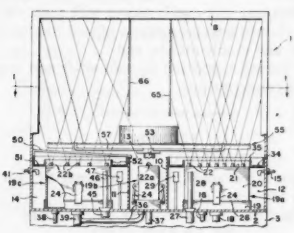
1. A device for combing or picking hair comprising, a housing, positive stop means within said housing, a holder slidably supported in said housing, a plurality of picks or fingers secured to said holder and slidable with said holder, a manually operated actuator supported by said holder and extending laterally of the side of said housing for manual actuation from said side, said manually operated actuator when manually released at the fully forward and fully rearward positions engaging said stop means in said housing, for locking said holder in either its fully rearward position or fully forward position to retain said picks or fingers respectively in either fully retracted position or fully extended position with respect to said housing.

3,878,856

APPARATUS FOR WASHING GLASSWARE

Jon D. Hall, 2233 N. Woodbridge, Saginaw, Mich. 48602

Filed Apr. 6, 1973, Ser. No. 348,525
Int. Cl. B08b *3/02*
U.S. Cl. 134—60 13 Claims



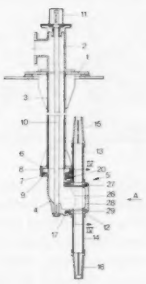
1. Washing apparatus for articles such as glassware, said apparatus comprising an enclosure; means carried by said enclosure and dividing the latter into a wash compartment, a first rinse compartment, and a second rinse compartment, said first rinse compartment being interposed between said wash compartment and said second rinse compartment; article support means, means for driving said article support means and any articles supported thereby along a path leading successively past said wash compartment, said first rinse compartment, and said second rinse compartment; means for spraying articles passing said wash compartment with washing liquid; means for supplying said second rinse compartment with rinse liquid; first discharge means for spraying articles passing said first rinse compartment with rinse liquid; second discharge means for spraying articles passing said second rinse compartment with rinse liquid; means for delivering rinse liquid from said second rinse compartment simultaneously to each of said first and second discharge means; and deflector means interposed between said first and second discharge means and overlying a portion of said second rinse compartment for deflecting rinse liquid discharged by said first discharge means to said first rinse compartment.

3,878,857

APPARATUS FOR CLEANING TANKS AND THE LIKE

Ulf Heibo, Renesporet 6B, 1347 Hosle, Norway

Filed May 9, 1973, Ser. No. 358,595
Claims priority, application Norway, May 9, 1972, 1646/72
Int. Cl. B08b *3/02, 9/08*
U.S. Cl. 134—167 R 3 Claims



1. Apparatus for cleaning the interior surfaces of tanks and the like, comprising an outer section with a flange means for attachment to the wall of a tank to be cleaned, and with means for connection to a fluid supply and to a driving means, and an inner section with a supply tube for introduction into the tank, which tube is fixed to the flange means at one end and at its other end is provided with a flushing head which is rotatable about the tube axis and has a tube section on which there is pivotally mounted a nozzle unit with two oppositely directed nozzles so that the nozzle unit is rotatable about an axis at right angles to the tube axis, the flushing head being provided with means for rotating the nozzle unit a small angle for each revolution of the flushing head, characterized in that the flushing head is mounted in a holder means fixed to the adjacent end of the tube, and is rotated by means of a driving shaft disposed concentrically in the supply tube, which is attached to the flushing head at one end and is connectable to the external driving means at its other end, and in that said tube section of the flushing head is provided with a slot-like aperture in the area facing the nozzles, which aperture extends essentially over one half of the circumference of the tube section, for supplying cleaning fluid to only one nozzle at a time.

3,878,858

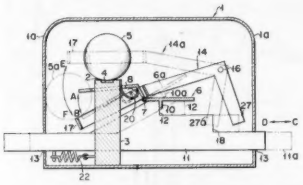
SAFETY DEVICE AUTOMATICALLY ACTUATED BY VIBRATIONS

Masafusa Yamada, 10-9; 3-chome, Azumabashi, Sumida-ku, Tokyo, Japan

Filed Nov. 28, 1973, Ser. No. 419,863
Claims priority, application Japan, Nov. 30, 1972, 47-137180
Int. Cl. F16k *17/36*
U.S. Cl. 137—38 5 Claims

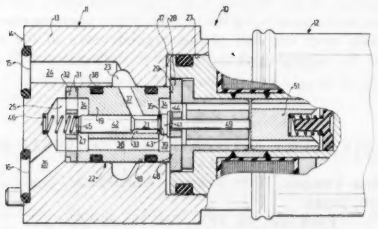
1. A safety device automatically actuated by vibrations, comprising:

a housing having mutually facing side walls;
a lock lever pivotally received in the housing;
first urging means coupled to said lock lever for normally urging said lock lever so as to rotate in one direction;
a lock projection formed on the lock lever;
a slidable member reciprocally supported on both of said mutually facing side walls in said housing;
second urging means coupled to said slidable member for normally urging said slidable member so as to move in one direction toward an abnormal position, but which is forcefully movable into place against the force of said second urging means to be engaged with said lock projection and be locked in a normal position and, when released from said lock projection, slides substantially horizontally from the normal to the abnormal position by the force of said second urging means;



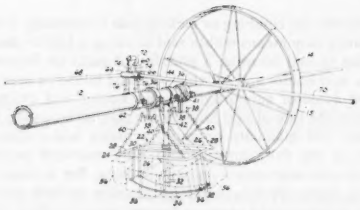
a stepped lock portion formed on said slidable member for engagement with said lock projection to thereby lock said slidable member in said normal position;
a weight normally secured in a given place and which, when subjected to strong vibrations, falls from said given place onto said lock lever, thereby causing said lock lever to rotate against the force of said first urging means; and
a two-armed return lever rotatable from outside of the housing, whose rotation causes one of its arms to engage and lift the fallen weight back to the original position prior to its fall and the other arm to abut against and engage said stepped engagement portion of said slidable member to pull it back from its abnormal position and to lock it in said normal position.

3,878,859
ELECTROMAGNETIC VALVE
Alfred Grob, Oberstenfeld; Waldemar Hans, and Helmut Staib, both of Bamberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Feb. 15, 1974, Ser. No. 443,152
Claims priority, application Germany, Mar. 28, 1973, 2315425
Int. Cl. F16k *31/02*
U.S. Cl. 137—270 **15 Claims**



1. An electromagnetic valve, comprising a valve unit including a valve housing formed with an interior passage which communicates with an inlet opening and an outlet opening; a biasing spring in said valve housing; a valve assembly, including valve seat means having a single valve seat interposed in said passage, and a valve element biased by said biasing spring and shiftably accommodated in said passage, said valve assembly being positionable in said passage in one orientation in which said valve element is permanently biased into engagement with said single valve seat and in another orientation in which said valve element is permanently biased out of engagement with said single valve seat; and a drive unit including a drive housing removably connected with said valve housing, and electromagnetic drive means in said drive housing and operative, when energized, for shifting said valve element in said passage counter to the biasing force of said spring.

3,878,860
ANCHOR FOR WHEEL SUPPORTED CROP IRRIGATION CONDUIT
Arnold J. Pritchard, Route 1, Carnegie, Okla. 73015
Filed Apr. 29, 1974, Ser. No. 465,387
Int. Cl. A01g *25/02*
U.S. Cl. 137—344 **6 Claims**



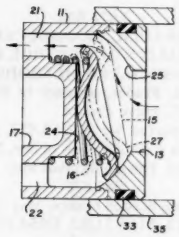
1. In an irrigation apparatus having an elongated conduit coaxially connected with a plurality of wheels for lateral movement of the conduit across land to be irrigated by angular rotation of the conduit about its longitudinal axis, the improvement comprising:
a shaft secured at one end portion to said conduit and normally depending therefrom with its longitudinal axis normal to the longitudinal axis of said conduit;
counterweight cradle means disposed in depending relation with respect to said conduit;
means connecting said cradle means with said conduit permitting selected angular rotation of said conduit independently of said cradle means; and,
a mandrel means supported by said shaft and engageable with said cradle means.

3,878,861
UNITIZED VALVE ASSEMBLY
Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Sept. 10, 1973, Ser. No. 395,945
Int. Cl. F16k *15/02*
U.S. Cl. 137—543.17 **5 Claims**

1. In unidirectional flow valve means including a housing, a valve seat, and a spring biased poppet;
a. housing means including a generally cylindrical casing with the housing having an inlet port at one end and an outlet port at the other end, and poppet retaining cage means disposed between said inlet and outlet ports;
b. a generally cylindrical sleeve means disposed substantially coaxially within said housing means and having a poppet abutment surface arranged along the inner end thereof;
c. spider support arms extending radially outwardly from said sleeve means and securing said sleeve means to said housing means, and defining a plurality of segmental annular flow channels therebetween;

d. valve seat means disposed inwardly of and adjacent said inlet port and having a seat portion defining an annulus in the form of a spherical segmental zone, with said seat portion having a seating surface disposed in opposed concave relationship to said outlet port and being spaced from said abutment surface by a certain predetermined distance;

e. poppet means disposed within said housing and arranged for retention between said abutment surface and the seating portion of said valve seat means, and resilient spring means in contact with said poppet means and normally biasing said poppet means into sealing contact



with said seating portion, said poppet means having a body in the form of a disc with a central base abutment surface contacting portion and with a seating periphery arranged therearound for seating contact with the seat portion of said valve seat; said poppet being formed generally as a segment of a spherical shell with a central portion convex to said abutment surface and with the outer peripheral edge portion of said poppet being concave to said abutment surface; and

f. said spring means having a solid height less than that height reached upon compression thereof with the abutment surface contacting portion of said poppet in contact with said abutment surface.

3,878,862

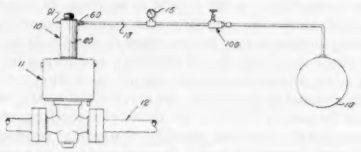
PNEUMATIC VALVE POSITION INDICATOR

James R. Blanton, Richardson, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Feb. 2, 1973, Ser. No. 329,105

Int. Cl. F16k *37/00*

U.S. Cl. 137—553 **2 Claims**



1. A system for indicating a change of position of a gate valve in a first fluid system having a longitudinally movable valve stem comprising: a source of fluid pressure independent of said first fluid system; a conduit connected with said source of fluid pressure; a pressure release valve connected with said conduit; a pressure gauge connected with said conduit between said pressure source and said pressure release valve to indicate a change of fluid pressure in said conduit; a valve stem extension member connected with the valve stem of said monitored valve and operably connected with said release valve, said extension member having a first operator surface for permitting said release valve to remain closed and a second operator surface for engaging said pressure release valve for opening said release valve responsive to movement of said stem of said monitored valve to release pressure in said conduit whereby a pressure decrease on said pressure gauge reflects movement of said monitored valve; and a velocity check valve in said conduit between said pressure source and said pressure gauge, said velocity check valve being adapted to close in response to the opening of said pressure release valve whereby the section of said conduit including said pressure gauge is relieved of fluid pressure responsive to the opening of said pressure release valve for indicating a change of pressure on said pressure gauge reflecting movement of said monitored valve without releasing all pressure within said pressure source.

3,878,863

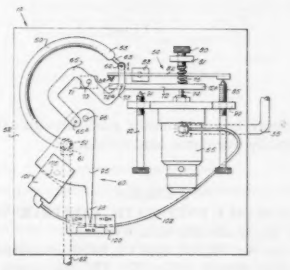
PILOT VALVE SYSTEM

David E. Snyder, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 7, 1973, Ser. No. 357,855

Int. Cl. F16k *37/00*; **G05d** *16/00*; **F16k** *31/12*

U.S. Cl. 137—553 **12 Claims**



1. A pilot valve system for controlling a first fluid pressure in response to predetermined high and low values of a second fluid pressure comprising: a bourdon tube fixed at and connectible with said second fluid pressure at a first end and free at a second end to move in response to changes in said second fluid pressure within said tube; a bleed valve connectible with said first fluid pressure to exhaust said pressure; bleed valve operator means connected between said second end of said bourdon tube and said bleed valve for opening said bleed valve responsive to one of both a high and a low value of said second fluid pressure, said operator means being functional at both of said pressure values for each of a plurality of adjustments of said values.

3,878,864

BYPASS VALVE

Joseph A. Schurger, Wooster, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

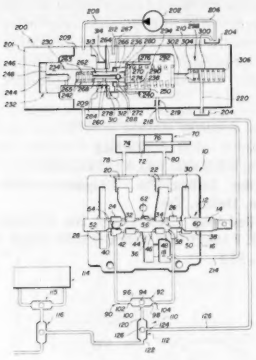
Filed Dec. 7, 1973, Ser. No. 422,646

Int. Cl. F16k *11/10*

U.S. Cl. 137—596.13 **7 Claims**

1. A differential pressure actuated bypass valve for use in a hydraulic control system having a control valve with pressure inlet, motor, and fluid return ports and a movable valving element; including a source of fluid supply connected to said inlet port, said control valve having a neutral position, a control circuit associated with said control valve and adapted to be connected to a motor port when said control valve is moved from its neutral position, said bypass valve being connected to said source of supply, said bypass valve being connected to said control circuit and adapted to be connected to said motor port through said control circuit whereby said bypass valve is operative to bypass fluid from said source to said sump as a function of the difference in fluid pressure between said inlet port and said motor port, said bypass valve having fluid-responsive valve means responsive to fluid pres-

sure in said motor port, and said fluid responsive valve means having means providing a fluid connection between said



source of supply and said motor port through said control circuit to initially overcome load resistance.

3,878,865

PROGRAMMABLE PNEUMATIC CONTROL SYSTEM

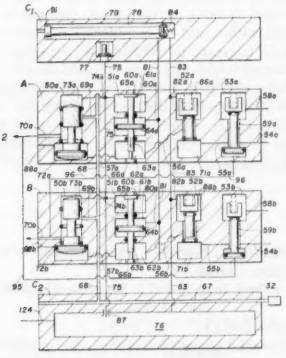
Kurt Friebe, Karlsruhe-Durlach, Germany

Division of Ser. No. 79,796, Oct. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 721,760, April 16, 1968. This application Aug. 9, 1972, Ser. No. 279,165

Claims priority, application France, Apr. 28, 1967, 522794

Int. Cl. F16k *31/12*

U.S. Cl. 137—608 **8 Claims**



1. Apparatus for the programmed control of the flow of a compressed fluid, which comprises

1. a source of compressed fluid,
2. a plurality of substantially identical, interconnected valve stages, each valve stage including
   a. at least one slide valve having a housing and a slidable piston therein, the piston having respective end faces defining respective chambers with the housing and further defining an annular groove between the end faces, and the valve housing having a fluid input duct connected to said source of compressed fluid and a fluid output duct in communication with the annular groove,
   b. a check valve having an input end and an output end, and
   c. conduit means for supplying a control signal of compressed fluid to the input end of the check valve and to one of the valve chambers whereby the check valve and the slide valve are opened and the output duct receives compressed fluid through the annular groove, and
3. further conduit means interconnecting the output end of each check valve of each stage with the other valve chamber of each valve of each stage and with the output end of the corresponding check valve in the other valve stages.

3,878,866

ELECTRO-HYDRAULIC TRANSDUCER AMPLIFIER WITH A PLURALITY OF CONTROL INPUTS, AND ASSOCIATED METHODS

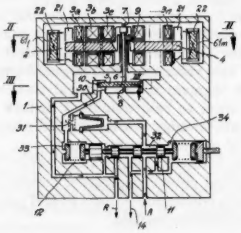
Rene Lucien, Seine, France, assignor to Recherches Etudes Production R.E.P., Paris, France

Continuation-in-part of Ser. No. 68,557, Aug. 31, 1970, abandoned, which is a continuation of Ser. No. 548,301, May 6, 1966, abandoned. This application May 1, 1972, Ser. No. 249,671

Claims priority, application France, May 7, 1966, 66.16268

Int. Cl. F16k *31/02*; **G05d** *16/20*

U.S. Cl. 137—/625.61 **6 Claims**



1. A hydraulic transducer comprising in a single unit and in a single casing, an electromagnetic motor having a magnetic circuit with two air gaps and first and second pluralities of separate and independent, individual, control windings, means for applying a respective signal from a first and a second series of signals to a respective control winding of said first and second pluralities respectively, each winding having a number of turns proportional to the weight to be given its respective signal, said means for applying said signals comprising an alternating current source having phase or amplitude modulation of equal frequency for all windings, and means for converting each alternating current signal to a direct current signal modulated in amplitude, the mechanical system having a natural frequency which is less than twice the frequency of the input signals, said first plurality of windings producing a first magnetic flux which passes through said two air gaps, said second plurality of windings producing a second magnetic flux which is perpendicular to said first magnetic flux, one permanent magnet supplying an additional flux to one of said two fluxes, a magnetic blade rotatable in the two air gaps of said magnetic circuit under the combined influence of said two fluxes, said blade being angularly displaced in said air gaps by an amount which is a function of the product of the weighted algebraic sums of the two respective series of signals, a hydraulic blade, a rigid shaft coupling including a fluid-tight torsion tube connecting said magnetic blade and hydraulic blade, at least one hydraulic jet in front of which said hydraulic blade rotates, a servodistributor controlled by said jet and thereby by the position of the hydraulic blade with respect thereto, a hydraulic source supplying said distributor, and an outlet orifice controlled by said distributor for delivery of hydraulic fluid at a flow rate related to the position of the

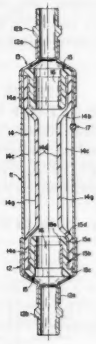
hydraulic blade as influenced by the magnetic blade and hence as a measure of the product of the weighted algebraic sums respectively of said first and second series of signals.

3,878,867

LIQUID LINE SHOCK ABSORBER

Richard D. Dirks, Shoreland Hills, Ind., assignor to Josam Manufacturing Co., Michigan City, Ind.

Filed Nov. 14, 1973, Ser. No. 415,746
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **15 Claims**



1. A shock absorber unit for a liquid conveying line, comprising:

a substantially rigid cylindrical shell tube;

an elastomeric expansible and contractable diaphragm sleeve enclosed in said tube;

securing means inserted in and anchoring each respective sleeve end into sealed anchored relation with the interior surface of the shell tube whereby there is defined a circumferential gas chamber between the tube, sleeve and sleeve ends; shell end caps fitted and sealingly secured onto the respective ends of said tube to define with the diaphragm sleeve interior, a liquid chamber,

at least one of said caps being an adapter cap whereby liquid line piping may be connected to said unit to put the liquid in the line in communication with said liquid chamber;

said sleeve and shell being impervious to said liquid and to an inert gas captured in said gas chamber; each said securing means comprising

a molded elastomeric anchor element affording an internal sleeve portion inserted in the respective diaphragm sleeve end and having a plurality of spaced external circumferential ribs for gripping engagement with the interior surface of the diaphragm sleeve end and also having an external circumferential outer end flange providing a radial stop shoulder extending over the edge of the adjacent end on at least one of the diaphragm sleeve and shell tube;

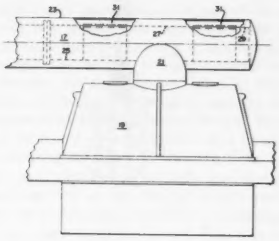
said securing means further including a generally cylindrical metal ring radially expanding the anchor sleeve portion to grippingly engage the interior of, and outwardly expand, the diaphragm sleeve end in retentive relation to surrounding structure.

3,878,868

EXPANSION JOINT

Eric B. Wheeler, Duanesburg, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1973, Ser. No. 424,808
Int. Cl. F16l *53/100*
U.S. Cl. 138—32 **9 Claims**



1. A bellows expansion joint for connecting a pair of pipe sections comprising:

a pair of end rings, one at the end of each pipe section;

a center ring axially positioned between the end rings;

a pair of intermediate rings, one between the center ring and each end ring;

a pair of axially outer bellows, one connecting each end ring with an adjacent intermediate ring;

a pair of axially inner bellows, one connecting each intermediate ring with the center ring;

a pair of end ring liners, each attached at one end to its respective end ring and having the other end free and directed toward the center ring; each free end terminating in a radially outward circumferential lip defining a pair of axially outer limit stops;

a center ring liner, attached at a point between its ends to the center ring and having oppositely directed free ends, each free end terminating in a radially outward circumferential lip defining a pair of axially inner limit stops; and,

stop means depending radially inward from each intermediate ring and cooperating with the outer and inner limit stops for limiting the axial deflection of each bellows.

3,878,869

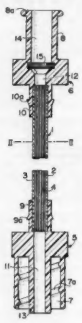
LIQUID TRANSFUSION PIPE FOR A VERY SMALL QUANTITY

Itsuro Yamanouchi, Okayama, and Tsuyoshi Tsuji, Omiya, both of Japan, assignors to Atomu Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1973, Ser. No. 364,259
Claims priority, application Japan, May 29, 1972, 47-53223
Int. Cl. F15d *1/02*
U.S. Cl. 138—40 **8 Claims**

1. A liquid transfusion pipe for transfusing a small quantity of liquid and comprising an elongate tubular member having an axially extending capillary passage therein, and a pair of connectors, one at one end of the tubular member and the other at the opposite end of the tubular member, said one of said pair of connectors comprising a socket having a helical ridge on its inner wall and said other of said pair of connectors

comprising a plug having a flange, said helical ridge and said flange being adapted for respective engagement with a flange



and a helical ridge of a like plug and a like socket provided on separate connecting lines.

3,878,870

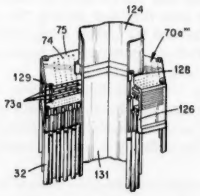
ORIFICE DESIGN FOR THE CONTROL OF COUPLED REGION FLOW

Richard Atherton; Peter R. Spadaro, both of Pittsburgh, Pa., and Frank G. Brummerhop, Baton Rouge, La., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 16, 1974, Ser. No. 461,316

Int. Cl. F15d *1/10*

U.S. Cl. 138—42 **3 Claims**



1. An orifice device for a nuclear reactor fluid flow channel disposed to transmit coupled fluid at least two different velocities in defined first and second regions of the channel; said device positioned at the inlet and outlet to the fluid flow channel and comprising

three spaced apart flat plates each having a plurality of spaced cylindrical holes ranging in size from 0.214 to 0.419 inch diameter and arranged in a triangular pattern of identical pitch, said holes defining an area ratio from 0.08:1 to 0.40:1, the outer plates having an aligned hole pattern and the middle plate having a non-aligned hole pattern in respect to said outer plate pattern to define a plurality of cylindrical loci in parallel, non-intersecting paths,

said plates having larger diameter holes in the greater velocity region than the holes in the lower velocity region, the diameter of said lower velocity holes to the diameter of said greater velocity holes defined in a ratio ranging from 1:1 to 1:1.16.

3,878,871

CORROSION RESISTANT ALUMINUM COMPOSITE

William H. Anthony, and James M. Popplewell, both of Guilford, Conn., assignors to Saliss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 12, 1973, Ser. No. 414,862

Int. Cl. B32b *15/00*; C22c *21/02*

U.S. Cl. 138—140 **15 Claims**

1. A corrosion resistant aluminum alloy composite comprising:

A. an aluminum alloy core consisting essentially of from 0.001 to 0.3% magnesium, 0.2 to 0.8% manganese, 0.001 to 0.1% chromium, 0.001 to 0.2% titanium, 0.05 to 0.5% silicon, 0.001 to 0.2% iron, 0.001 to 0.1% copper, and 0.001 to 0.1% zinc, balance aluminum; and

B. an aluminum alloy cladding, metallurgically bonded to at least one surface of the core, consisting essentially of from 0.001 to 0.1% magnesium, 0.8 to 1.2% manganese, 0.001 to .1% chromium, .001 to .1% titanium, 0.001 to 0.05% silicon, 0.001 to 0.05% copper, 0.1 to 0.4% zinc, and 0.001 to 0.1% iron, balance aluminum.

3,878,872

WARP LET-OFF MEANS

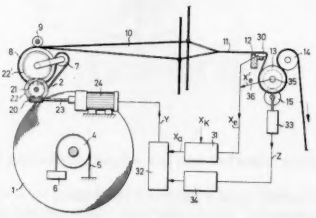
Otto Hintsch, Wallisellen, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Sept. 27, 1973, Ser. No. 401,277

Claims priority, application Switzerland, Sept. 29, 1972, 14294/72

Int. Cl. D03d *49/04*

U.S. Cl. 139—99 **10 Claims**



1. In a weaving machine having a feed roller for feeding warp yarns into a shed and a breast beam downstream of said shed for passage of a produced cloth thereover; a warp let off means for driving said feed roller including an electronic warp tension control circuit having a control element for controlling the speed of said feed roller in dependence upon warp tension in said machine and a pressure sensor disposed on said breast beam for producing a control signal corresponding to warp tension in response to the pressure of the cloth on said breast beam for emission to said control element.

3,878,873

APPARATUS FOR FORMING FIBER-FILLED ARTICLES

Arnold L. Willis, Chicago, and Harold Wortman, Morton Grove, both of Ill., assignors to CWW Research and Development Company, Elkgrove Village, Ill.

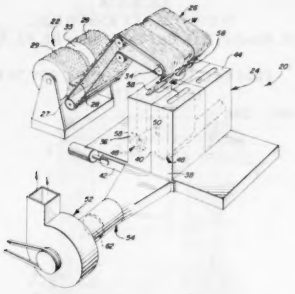
Filed July 6, 1973, Ser. No. 377,072

Int. Cl. B65b *1/00*; D01g *13/00*

U.S. Cl. 141—67 **4 Claims**

1. Apparatus for forming articles having sections of a web of substantially parallel fibers enclosed in an air-penetrable casing comprising: means for feeding and moving a fibrous web from a first end to a second end of a conveyor means; a chamber having means dividing the interior thereof into at least two compartments; means for supporting a casing in each compartment of said chamber, with an open end of said casings located essentially below and adjacent to said second end

of said conveyor means; means for applying a suction in said chamber at an end thereof opposite said conveyor; duct means leading from said suction means to the bottom of each of said compartments; means for regulating the application of suction between each of said compartments, so that the fibrous web



directed off the conveyor at said second end is separated into sections and impelled alternately into casings in said compartments, with the fibers being deposited in said casings in layers, whereby when the articles are filled, substantially all of the fibers will be disposed generally parallel to the direction of the force to be applied thereto.

3,878,874

APPARATUS FOR EVACUATING VESSELS

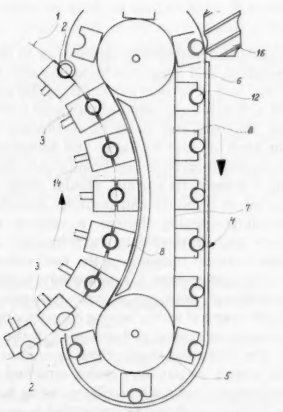
Werner Heckmann, Dortmund, Germany, assignor to Holstein & Kappert Maschinenfabrik Phonix G.m.b.H, Dortmund, Germany

Filed Dec. 20, 1972, Ser. No. 316,991

Claims priority, application Germany, Dec. 31, 1971, 2165930

Int. Cl. B65b *3/16*

U.S. Cl. 141—114 **4 Claims**



1. Apparatus for evacuating vessels which have deformation-sensitive walls, prior to filling the vessels, comprising a machine including a movable member, spaced vessel trays mounted on said movable member for movement along a first path of travel, and a device for feeding vessels to said vessel trays and arranged to move in cooperating relation with said movable member on said machine, wherein the improvement comprises that said device for feeding vessels is separate from said movable member and moves along a second path of travel different from the first path of travel of said movable member, said device includes a plurality of uniformly spaced first housing members movable thereon along the second path of travel and only a part of the second path of travel being arranged to move in side-by-side relation with the first path of travel of said vessel trays, said movable member includes a plurality of uniformly spaced second housing members each associated with a different one of said vessel trays and said second housing members spaced apart at the same spacing as said first housing members, each said first housing member arranged to move into matching engagement with one of said second housing members as it passes along the part of the second path of travel which is in side-by-side relation with the first path of travel of said vessel trays for forming, in combination with said vessel tray within said second housing member with which it matches, a housing for the vessel supplied by said device for feeding vessels, each said first housing member and said second housing member having a recess formed therein so that said recesses in matching ones of said first housing member and second housing member combine to form a continuous cavity at least partly encircling the deformation-sensitive walls of the vessel supplied by said device, means associated with said first and second housing members and arranged to cooperate with the vessels supplied by said device so that the portion of the vessels enclosed by said cavities are sealed from the atmosphere, conduit means for connecting the cavities to a sub-atmospheric pressure, means for evacuating the vessels held in the matching ones of said first housing members and second housing members, means for actuating said means for evacuating the vessels, said conduit means connected to the cavities in the matching ones of said first housing members and second housing members and said means for evacuating the vessels being connected so that when the evacuation of a vessel is effected the same sub-atmospheric pressure is exposed to said cavity in the matching ones of said first housing members and second housing members for exposing the interior and exterior of the vessel to the same sub-atmospheric pressure.

3,878,875

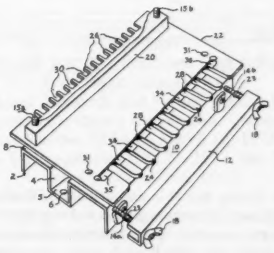
DOVETAIL FIXTURE

Wilfred M. McCord, Jr., Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.

Division of Ser. No. 406,298, Oct. 15, 1973, Pat. No. 3,834,435, which is a division of Ser. No. 275,303, July 26, 1972, Pat. No. 3,800,840. This application May 15, 1974, Ser. No. 470,196

Int. Cl. B27f *1/14*

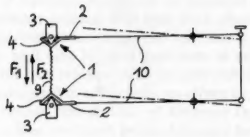
U.S. Cl. 144—87 **1 Claim**



1. In a dovetail fixture of the type employing a template for guiding a cutting tool in cutting mortises and tenons, means for slightly moving said template in any direction to compensate for eccentricity of router bit guide bushings including a circular disc adapted on insertion to fit rotatably within a hole in the template, snap-in retention means holding said insert

disc in the template hole, said insert disc having an eccentric orifice therethrough which is moved slightly in any direction on partial rotation of the disc within the hole.

3,878,876
MULTI-PURPOSE SAW BLADE SUSPENSION ARRANGEMENT FOR RECIPROCATING SAWS
Helmut Abel, 16, Ave. Massena, Paris, France
Filed Jan. 9, 1974, Ser. No. 431,930
Claims priority, application France, Feb. 14, 1973, 73.05102; Apr. 9, 1973, 73.12617
Int. Cl. B27b *21/02*
U.S. Cl. 145—32 R **9 Claims**

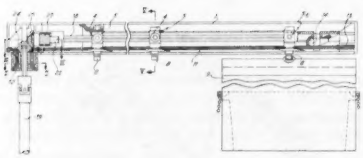


1. In a saw frame, a saw blade suspension arrangement for a saw blade (**9**) which is fixed at or adjacent its opposite ends to the saw frame (**10**), comprising

a clamping element (**3, 5, 6, 7**) located adjacent at least one end of the blade for attachment to the saw blade (**9**);

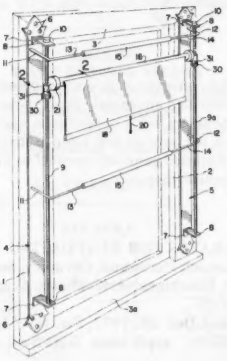
a fork-shaped element (**2, 11, 14, 14'**) disposed at one end of said frame and rockably mounting said clamping element on the outside of the saw frame, to permit the saw blade (**9**) to extend through the fork gap to its opposite end attachment to maintain the clamping element in engagement, said rockable fork-shaped element and the clamping element being shaped to form a projecting fulcrum on one of said elements and a V-shaped or similarly shaped hollow seat in the other one of said elements.

3,878,877
VERTICAL BLINDS
Paul Bruneau, Rue de Verdun 45, Checy, and Gaston Nufer, Les Marchais Timon 45, Ardon, both of France
Filed July 30, 1973, Ser. No. 383,516
Claims priority, application France, Aug. 8, 1972, 72.28525; Oct. 11, 1972, 72.35909
Int. Cl. E06b *9/26*
U.S. Cl. 160—168 **13 Claims**



1. A blind having movable and orientable slats, of the type incorporating a set of runners connected together by a flexible link which are mounted to be movable in translation in a continuous guide and which each carry an orientable shaft bearing a blind-slat, the runners on the one hand and the shafts on the other being connected kinematically to a single control member, an improvement wherein the said member is rotatable and is connected on the one hand to a pulley which drives a tensioned cord fixed to the first of the runners and, on the other to a rod equipped with worm gears each of which meshes with a pinion on a slat-bearing shaft, a first clutch being provided between the rotatable member and the drive pulley and a second clutch being provided between the rotatable member and the rod, each clutch being in its operative position when the other is in the inoperative position and vice versa.

3,878,878
WINDOW ACCESSORIES
William M. Reeder, P.O. Box 2666, State Rt. 82, Aurora, Ohio 44202
Filed Oct. 16, 1972, Ser. No. 297,763
Int. Cl. A47g *5/02*
U.S. Cl. 160—246 **4 Claims**



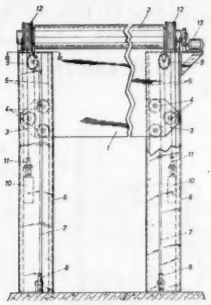
1. Apparatus for supporting accessories in proximity to an encased window, said apparatus including a pair of oppositely disposed side bars, a vertical substantially flat bracket secured to each of said side bars, angularly-shaped rod means having oppositely disposed end portions connected to the upper portion of each of said brackets and horizontally arranged means extending therefrom and being connected together for supporting a drapery or curtain, tubular shade means having extensions on its opposite end portions, each having a vertically extending opening therein, a vertical extending rod spaced from and supported by each bracket and extending through the vertical opening in the end extension on each shade means, and means for adjustably holding the shade means in different positions on said rod, said shade means consisting of a central casing having a longitudinally extending opening therein, a central rod arranged in the central casing to which one end of a shade cloth is connected and upon which it is wound, an auxiliary casing attached to each end of the central casing, and each auxiliary casing having a tubular extension thereon, and means connected to each bracket and extending outwardly therefrom for supporting the shade means including a vertical rod which extends through each of the respective openings in the tubular extensions on the respective end portions of the shade means, a torsion spring arranged in at least one of the auxiliary casings, means associated with one end of the central rod and the auxiliary casing having the torsion spring thereon for applying tension to said spring as the shade cloth is withdrawn through said longitudinal opening, and means whereby the tension on said spring my be released when the force upon the shade cloth is released.

3,878,879

ROLL-UP DOOR

Bernt Hugo Manns, Halmstad, Sweden, assignor to Nordiska Maskinfilt Aktiebolaget, Halmstad, Sweden

Filed Aug. 14, 1973, Ser. No. 388,211
Claims priority, application Sweden, Aug. 18, 1972, 10759/72
Int. Cl. E06b 9/08
U.S. Cl. 160—273 4 Claims



1. An improved roll-up door including a flexible door-leaf, a roller onto which said door is wound, first and second vertical side frames, guide means supported by said side frames for guiding said door during vertical movement, trolleys in said frames for maintaining said door in stretched condition laterally, the improvement comprising first and second pulleys, arranged in said vertical side frames respectively, first and second weights respectively secured to said pulleys for maintaining said flexible door in stretched condition in the vertical direction and simultaneously balancing said door, a groove in each of said pulleys, first and second ropes running in said respective grooves in each of said pulleys, first and second winding drums respectively at the ends of said roll-up roller, and first and second stationary pulleys in said frames, each of said ropes arranged to divide said respective weight into two opposing load components, one through the connection of one of the rope ends to said respective winding drum and the other one through the connection of the remaining rope end to said trolley via said first and second stationary pulleys, each of said ropes being respectively wound onto and off its respective winding drum in a direction opposite to the winding-on and winding-off directions of the door-leaf onto and off said roll-up roller.

3,878,880

COMPOSITE CASTING METHOD

Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed June 25, 1973, Ser. No. 373,514
Int. Cl. B22d 19/08
U.S. Cl. 164—9 7 Claims

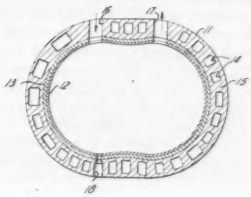
1. The method of producing a casting having a surface coated with hard facing material, comprising:

a. depositing a coating of selected thickness of metalloid hard facing material selected from the group consisting of tungsten, cobalt, molybdenum, tungsten carbide, cobalt carbide, molybdenum carbide, silicon carbide, and titanium carbide on a portion of a mold constituting at least a part of a mold cavity, the metalloid coating having an exposed irregular surface,

b. depositing a protective layer of a metal selected from the group consisting of the aluminum family and the copper family on the exposed irregular surface of the metalloid coating in interlocking relationship therewith, the metal protective layer having an irregular surface exposed to the mold cavity,

c. feeding molten basis metal selected from the group consisting of alloys of aluminum, magnesium, and zinc into the mold cavity under sufficient pressure to form an interlocking relationship with the irregular surface of the protective metal layer,

d. the metal of the protective layer having higher thermal conductivity than the metalloid material to distribute the heat of the basis metal rapidly around the metalloid material from the point of impact of the injected basis material against the protective layer, the metal of the protective layer having greater ductility than the metalloid material in order to absorb thermal stresses with minimum transmission thereof to the metalloid material, the protective layer being from three to twenty times the thickness of the metalloid material to provide a thermal gradient across its thickness to delay transmission of heat to the metalloid material, and the metal of the protective layer having a melting point lower than that of the metalloid but at least as high as that of the basis metal to preclude fusing of the protective layer, the combination of properties of the thermal layer preventing thermal damage to the metalloid coating from thermal shock of the casting procedure,



e. solidifying the casting within the cavity, and removing the casting from the cavity with the metal layer and the metalloid coating being integral parts of the casting, the metalloid coating forming a hard facing on at least a portion of a surface of the casting.

3,878,881

METHOD FOR PRODUCING AND ASSEMBLING COPE AND DRAG MOLD PARTS

Robert S. Lund, Elmhurst, and Vernon J. Koss, Niles, both of Ill., assignors to Pettibone Corporation, Chicago, Ill.

Division of Ser. No. 233,438, March 10, 1972, Pat. No. 3,828,840. This application Oct. 23, 1973, Ser. No. 408,483
Int. Cl. B22c 11/04, 15/24
U.S. Cl. 164—37 3 Claims

1. That method of producing separate cope and drag mold parts and assembling them to produce a composite mold, which comprises:

a. establishing spaced apart flask-handling working and stripping stations;

b. loosely positioning a pair of cope and drag flask sections with open upper and lower ends on respective upper and lower cope and drag flask supports and moving said supports in a circular horizontal path while maintaining the flask sections in relatively fixed vertically spaced and aligned relationship at upper and lower levels respectively

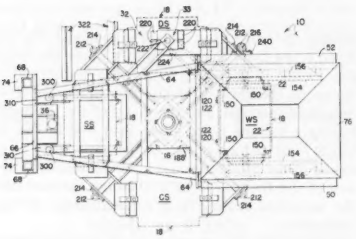
and causing them to pass in unison alternately and repeatedly through said stations at their respective levels with a period of dwell at each station;

c. loosely positioning a pattern-carrying match plate on a match plate support and fixedly and permanently maintaining such support at the working station at a mid-level so that the upper and lower flask supports, in passing through such station, move into straddling but spaced relationship with respect to the match plate support above and below the same during the dwell period at such station;

d. raising the drag flask section during such dwell period at the working station from said lower support in order to bring the upper open rim of such section into engagement with the underneath side of the match plate and thus raise the latter from its mid-level support into engagement with the lower rim of the cope flask section so as to raise the latter section from said upper support while simultaneously closing the lower and upper rims of the drag and cope flask sections in order to establish cope and drag flask cavities on opposite sides of the match plate;

e. simultaneously filling said cavities at said working station with sand by a blowing operation and compressing the sand vertically in order to produce said cope and drag mold parts within the cope and drag flask sections respectively and in superimposed relationship;

f. lowering the drag flask section at said working station in order to restore the same, the match plate and the cope



flask section to the upper flask support, the mid-level match plate support and the lower flask support successively and in the order named thus to free them from one another, whereby continued horizontal movement of the cope and drag flask supports at said upper and lower levels will transport the flask sections supported thereby away from their straddling relationship with respect to the match plate and to the stripping station with the mold parts therein,

g. raising the drag flask section and its contained mold part vertically from said lower support at said stripping station into rim-to-rim engagement with the cope flask section and its contained mold part on said upper support during the dwell period at the stripping station in order to assemble such mold parts and produce the composite mold within the contiguous flask sections;

h. causing the contiguous flask sections and the composite mold contained therein to move vertically with respect to each other in order to strip the composite mold from the contiguous flask sections; and

i. lowering the stripped drag flask section at said stripping station in order thus to restore the same to the lower flask support and resultantly free the flask sections from each other, whereby continued horizontal movement of the cope and drag flask supports will transport the empty flask sections thereon to the working station and back into straddling relationship with respect to the fixed match plate support at said working station.

3,878,882

METHOD FOR PRODUCING SHAPED INGOTS BY ELECTROSLAG REMELTING

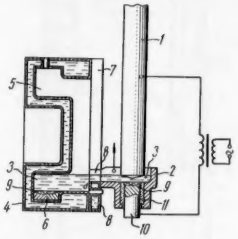
Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9; Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Rudolf Solomonovich Dubinsky, Politekhnicheskaya ulitsa, 5, kv. 209; Georgy Alexandrovich Boiko, ulitsa Vladimiro lybedskaya, 16, kv. 106; Sergei Petrovich Egorov, ulitsa Nevskaya 34, kv. 1; Ilya Iosifovich Kumysh, Vozdukhoflotsky prospekt, 42, kv. 51, all of, Kiev, and Lev Vasilievich Popov, ulitsa Kharkovskaya, 2, kv. 21, Bryansk, all of U.S.S.R.

Continuation of Ser. No. 319,648, Dec. 29, 1972, abandoned. This application Mar. 12, 1974, Ser. No. 450,389

Claims priority, application U.S.S.R., Jan. 13, 1972, 1732351

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 **3 Claims**



1. A method for producing shaped ingots comprising the following steps: producing a slag bath in a smelting vessel communicating with the internal space of a split jacketed mould so that the level of the slag bath in said mould is an extension of the level of the slag bath in the smelting vessel; producing liquid metal by electro slag remelting a consumable electrode in the smelting vessel; feeding the liquid metal from said vessel into said mould having a variable cross section; maintaining a constant difference between the levels of the liquid metal baths in said smelting vessel and said split jacketed mould by vertically displacing one of them relative to the other as the ingot grows; shaping said ingot in said split jacketed mould; and subsequently extracting the shaped ingot from the mould.

3,878,883

SYMMETRICAL SYNCHRONIZED BELT-STEERING AND TENSIONING SYSTEM AND APPARATUS FOR TWIN-BELT CONTINUOUS METAL CASTING MACHINES

Robert William Hazelett, Winooski; John Frederick Barry Wood, Burlington, and Robert J. Carmichael, Colchester, all of Vt., assignors to Hazelett Strip-Casting Corporation, Winooski, Vt.

Filed Apr. 12, 1973, Ser. No. 350,600

Int. Cl. B22d *11/06*

U.S. Cl. 164—278 **15 Claims**

1. A symmetrical belt-tensioning system for use in a twin-belt continuous metal casting machine of the type in which a casting region is defined between spaced parallel portions of two casting belts, said system comprising:

a carriage for supporting and revolving a casting belt having a pair of main rolls at opposite ends of a carriage frame, said rolls extending parallel to each other and also parallel to the plane of the casting region for defining an oval shaped path around which the casting belt is revolved,

one of said main rolls being hollow,

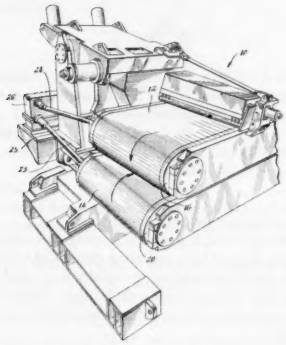
a rigid squaring shaft passing through said hollow roll from one end to the other,

a pair of bearings encircling said squaring shaft for mounting said hollow roll on said squaring shaft, one of said

bearings being mounted near each end of said hollow roll providing free rotation of said roll about said squaring shaft,

a pair of parallel torque arms rigidly secured to opposite ends of said squaring shaft, a pair of pivot mountings positioned on opposite sides of the carriage frame for mounting the respective torque arms on the carriage frame,

a pair of consistent, predictable force-applying means, one of said force-applying means being associated with each of said torque arms urging both of said torque arms simultaneously to swing about said pivot mountings for moving said one roll in a direction away from the other roll for tightening the casting belt on said carriage, the axis of said squaring shaft being swingable along an arc about said pivot mountings,



said arc including a first retracted position of said squaring shaft axis for belt changing, a second position when the shortest new belt is pulled tight, a third mid-position and a fourth position when a fully elongated belt is pulled tight, a plane extending through the axis of said squaring shaft in said third mid-position and through said pivot mountings for said torque arms being perpendicular to the castin plane,

a pair of steering means on opposite sides of the carriage frame for moving said pivot mountings effectively toward and away from the plane of the casting region, and

synchronizing means interconnecting said pair of steering means for causing said pivot mountings simultaneously to move equal amounts in opposite directions effectively towards and away from the plane of the casting region when said synchronizing means are actuated, whereby said hollow roll is skewed symmetrically with respect to the carriage frame for steering the casting belt.

3,878,884

FORMATION FRACTURING METHOD

Cecil B. Raleigh, 762 La Para, Palo Alto, Calif. 94306

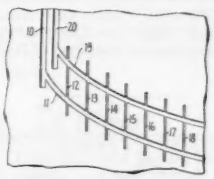
Filed Apr. 2, 1973, Ser. No. 346,862
Int. Cl. F28d *21/00*
U.S. Cl. 165—1 **5 Claims**

1. A method of opening an earth formation in which the lines of least principal stress deviate substantially from the vertical to facilitate recovery of a resource held in the formation which comprises the steps of:

a. drilling an approximately vertical borehole into the formation;

b. drilling a slanted borehole extending from the vertical borehole into the formation in a direction such that the angle between the slanted borehole and the lines of least principal stress in the formation is not more than 60°; and

c. hydraulically fracturing the formation adjacent the



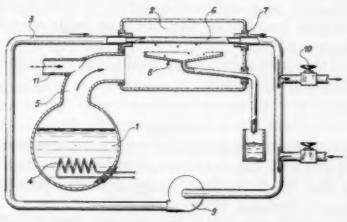
slanted borehole at a plurality of positions along the length of the slanted borehole.

3,878,885

METHOD FOR CAUSING CONDENSATION IN DROPS ON HEAT EXCHANGER TUBES

Jean Claude Deronzier, Gieres; Louis Foulletier, Oullins; Jean Huyghe, Grenoble, and Jean Marc Niezborala, Lyon, all of France, assignors to Commissariat a l'Energie Atomique and Societe Produits Chimiques Ugine-Kuhlmann, both of Paris, France

Filed Jan. 24, 1974, Ser. No. 436,197
Claims priority, application France, Feb. 2, 1973, 73.03660
Int. Cl. F28f *7/00*
U.S. Cl. 165—1 **10 Claims**



1. A method for promoting drop-wise condensation of a vapor feed on heat exchanger tubes, the improvement comprising adding to said vapor feed the vapor of at least one fluorinecontaining compound selected from:

a. compounds of the general formula:

$$C_nF_{2n+1} - (CH_2)_a - X$$

wherein a and n are whole integers in the range of 2–20, inclusive, and wherein X is a functional group providing for adherence of said compounds to the surfaces of the heat exchanger tubes; and

b. compounds of the general formula:

$$C_nF_{2n+1} - (CH_2)_a - S - S - (CH_2)_a - C_nF_{2n+1}$$

wherein a and n are whole integers in the range of 2–20, inclusive.

3,878,886

SYNERGISTIC HEAT EXCHANGE APPARATUS

Harold K. McIntire, Jr., R.R. 3 Ankeney Rd., Xenia, Ohio 45385

Filed Oct. 20, 1972, Ser. No. 299,391
Int. Cl. F25b *29/00*
U.S. Cl. 165—29 **4 Claims**

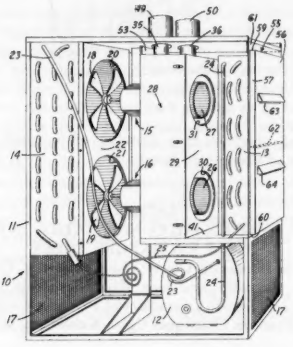
1. In a self-contained air-conditioning unit for supplying and re-circulating conditioned air to and from a pair of adjacent enclosures, the combination comprising

a single heat exchanger means having spaced apart opposite faces and having walls defining a plurality of parallel passageways extending between said faces,

a wall structure spaced apart from one of said faces and defining first and second blower-inlet means spaced apart from each other, and

means including first and second blower means conducting and maintaining two discrete flows of fluid without intermixing thereof from said heat exchanger means into said individual blower-inlet means and additionally including other walls defining a pair of spaced apart discrete passageways each connected to the other of said faces and in fluid flow relationship with certain of said parallel passageways for receiving fluid re-circulated from one of said enclosures,

one of said inlet means being positioned in alignment with said certain passageways.



3,878,887

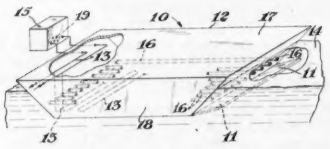
METHOD FOR SUPPRESSING THE FORMATION OF ICE IN NATURAL OR MAN-MADE BODIES OF WATER

John S. Best, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 268,468, July 3, 1972, Pat. No. 3,768,264. This application Dec. 4, 1972, Ser. No. 311,491

Int. Cl. F25b 29/03

U.S. Cl. 165—30 5 Claims



1. An apparatus adapted for suppressing the formation of ice in a natural or man-made body of water comprising heat storage means for storing heat near said body of water from at least one thermal energy source, said heat storage means including a liquid composition in which said heat is stored, said composition having a freezing temperature substantially above that necessary for the formation of ice in said body of water, and heat transfer means for transferring said stored heat into a portion of water adjacent the surface of said body of water in sufficient amount to substantially prevent or suppress the formation of ice in said body of water during cold seasonal days when the air temperature is below that necessary for the formation of an ice cover on said body of water, said heat transfer means including a traveling heat exchanger which is moved along a path in said body of water, said traveling heat exchanger including an intermediate composition to temporarily hold transferred heat before transferring it to said body of water, said intermediate composition having a freezing temperature substantially above that necessary for the formation of ice in said body of water but below that of the composition used to store heat near said body of water.

3,878,888

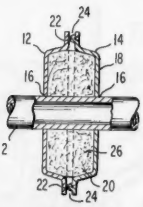
HEAT EXCHANGER

George H. Seidl, 924 Melrose Ave., Trenton, N.J. 08629

Filed Dec. 7, 1973, Ser. No. 422,672

Int. Cl. F24h 3/08; F28d 21/30

U.S. Cl. 165—128 7 Claims



1. A heat exchanger device comprising:

a. a pipe through which passes a heating or cooling fluid;

b. at least one pair of heat radiating plates detachably abutting each other and extending radially from said pipe said plates having recesses facing each other defining a cavity therebetween, said plates being detachably mounted on said pipe;

c. fibrous metallic heat storage and transmitting material located between said recesses and in said cavities for stabilizing heat flow from said pipe; and

d. separating means located peripherally on said heat radiating plates adapted to maintain a minimum separation between each said heat radiating plate in each said pair of plates, said separating means defining an air flow path with said heat storage material in said cavity to heat the surrounding area.

3,878,889

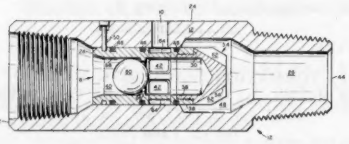
METHOD AND APPARATUS FOR WELL BORE WORK

Ed O. Seabourn, Norfolk, England, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 5, 1973, Ser. No. 329,540

Int. Cl. E21b 7/12

U.S. Cl. 166—.5 14 Claims



1. A reentry tool assembly, comprising:

a body having first, second, and middle portions, walls, a longitudinal opening extending therethrough, and a port opening through the walls at the first portion, said longitudinal opening being of a first diameter at the first portion, a second diameter at the second portion and a third diameter at the middle portion, said third diameter being larger than said first and second diameters;

a fluid diverting element having first and second ends, first, second, and middle portions, walls, a longitudinal opening extending through the element, and a port opening through the element walls at the middle portion, said element being slidably movable in the body between a first position at which the ports are in fluid communication one with the other and the second and middle portions of the longitudinal opening of the body are sealed and a second position at which the port and longitudinal opening of the element are in fluid communication with the second and middle portions of the longitudinal opening of the body, the port of the body is sealed, and the element is within the body;

first means for sealing the second end of the fluid diverting element and passing fluid from the element port through the annulus between the element and the middle and second portions of the body at the second position of the element; and

second means for releasably maintaining the element at the first position.

3,878,890

DETERMINATION OF RESIDUAL OIL IN A FORMATION

Walter H. Fertl, Ponca City, Okla., and Edward B. Reynolds, Spring, Tex., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 28, 1973, Ser. No. 420,189
Int. Cl. E21b 49/00
U.S. Cl. 166—252 8 Claims

1. A method for determining the residual oil in an oil bearing formation penetrated by the bore hole of a well comprising the steps of:

a. logging said formation to obtain logging data measurements of the relative quantities of residual oil and formation water present in the formation;

b. injecting into said formation, through said bore hole, a sufficient amount of an oil miscible solution, to displace substantially all of the residual oil in said formation surrounding said bore hole to a distance exceeding the radius of investigation of the logging means providing the logging data;

c. injecting into said formation through said bore hole a sufficient amount of water to displace substantially all of said oil miscible solution and cause said formation being tested to be substantially 100% water saturated; and

d. logging for a second time said formation to obtain logging data measurements; and,

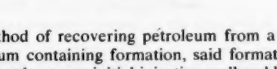
e. comparing the logging data measurements of said second log with the logging data measurements of said first log to determine the amount of residual oil in said formation.

3,878,891

TERTIARY RECOVERY OPERATION

Donald L. Hoyt, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 22, 1972, Ser. No. 317,580
Int. Cl. E21b 43/00
U.S. Cl. 166—245 11 Claims



1. In a method of recovering petroleum from a subterranean, petroleum containing formation, said formation being penetrated by at least one initial injection well and by at least two production wells, said formation having been exploited by means of an oil recovery method of the type in which an extraneous drive fluid is injected into the injection well to displace petroleum toward the production wells, the improvement which comprises:

penetrating said formation after breakthrough of the extraneous drive fluid at the production wells with at least one additional injection well drilled into a portion of the formation having a higher oil saturation than that portion immediately adjacent to said initial injection well, and

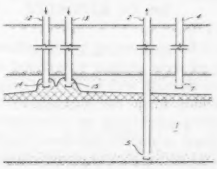
injecting into said second injection well, after breakthrough of the extraneous drive fluid injected into the initial injection well at the production wells, an extraneous drive fluid to displace additional formation fluids toward the production wells.

3,878,892

VERTICAL DOWNWARD GAS-DRIVEN MISCIBLE BLANKET FLOODING OIL RECOVERY PROCESS

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,418
Int. Cl. E21b 43/00, 43/16
U.S. Cl. 166—267 23 Claims



1. A vertically downward, miscible blanket flooding technique for recovering petroleum from a subterranean petroleum containing formation penetrated by at least two injection wells in fluid communication with the upper portion of the formation and by at least one production well in fluid communication with the lower portion of the formation comprising:

a. injecting a conventional solvent for petroleum;

b. injecting a dense solvent for petroleum, said dense solvent being denser than the formation petroleum, said conventional solvent and said dense solvent being injected essentially simultaneously in separate injection wells, the conventional solvent and dense solvent forming a mixture having a density greater than the conventional solvent and less than the formation petroleum;

c. injecting a gaseous drive fluid into the upper portion of the formation to displace the solvents and petroleum downward through the formation; and

d. recovering formation petroleum and solvents from the lower portion of the formation.

3,878,893

METHOD FOR FORMING A CONSOLIDATED GRAVEL PACK IN A WELL BOREHOLE

Claude T. Copeland, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 295,732, Oct. 6, 1972, abandoned. This application Oct. 19, 1973, Ser. No. 408,240
Int. Cl. E21b 43/02
U.S. Cl. 166—276 11 Claims

1. A method of forming a permeably consolidated particulate mass in communication with a permeable subterranean formation which comprises:

a. forming a pumpable slurry by mixing together a particulate material, an epoxy resin-solvent mixture, a curing agent, a coupling agent and a carrier liquid to form a slurry, said particulate material ranging in size from about 0.1 to about 0.0025 inch in diameter and is present in an amount ranging from about 7 to about 20 pounds per gallon of liquid in said slurry, said resin-solvent mixture comprising an epoxy resin and a polar organic solvent for said resin, said solvent in conjunction with said resin

being only partially miscible with said carrier liquid, said resin being present in an amount ranging from about 2 to about 10 pounds per 100 pounds of particulate material, said resin-solvent mixture containing from about 55 to about 85 percent by weight of resin,

b. introducing said slurry into a well bore and in communication with said permeable formation, and

c. curing said slurry in place to form a consolidated permeable mass.

3,878,894

PROCESS FOR RECOVERING HYDROCARBONS USING OVERBASED LINEAR ALKYLATE SULFONATES AS WATERFLOOD ADDITIVES

Charles R. Clark; M. Duane Gregory; Oliver C. Kerfoot, all of Ponca City, Okla.; Delmar D. Krehbiel, Lubbock, Tex., and Carl D. Kennedy, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 335,605, Feb. 26, 1973, abandoned. This application Sept. 5, 1974, Ser. No. 503,550

Int. Cl. E21b *43/22*

U.S. Cl. 166—270 **8 Claims**

8. In a process for recovering hydrocarbons from petroliferous formations wherein anionic waterflood additives, injected into a formation through well bores, are employed to displace such hydrocarbons form the formations the improvement therein comprising employing an overbased sulfonate as the anionic waterflood additive, said overbased sulfonate is derived by admixing sufficient base component with an alkylate sulfonate that the ratio: "weight of excess base component/weight of sulfonate" is about 0.03 to about 2.0; the base component being an alkali metal hydroxide, ammonium hydroxide, or an alkali metal carbonate; and the alkylate sulfonate is obtained by:

a. chlorinating a normal alkane having about 10 to about 18 carbon atoms with chlorine to form a chlorinated alkane derivative having a chlorine content of about 15 to about 45 weight percent;

b. alkylating an aromatic hydrocarbon with the chlorinated alkane derivative to form an alkylate product;

c. sulfonating the alkylate to form a sulfonic acid derivative; and

d. converting the sulfonic acid derivative to the corresponding sulfonate salt by reacting with the base component.

Additionally, please change the title to read —Waterflooding Method Using Overbased Sulfonate—.

3,878,895

CEMENT PREFLUSH METHOD

Denton R. Wieland, and Bobby L. Woods, both of Midland, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 11, 1974, Ser. No. 460,008

Int. Cl. E21b *33/14*

U.S. Cl. 166—294 **11 Claims**

1. A method of emplacing a hydraulic cement slurry into a bore hole penetrating a subterranean formation which is permeable to the flow of liquid contained in said hydraulic cement slurry which comprises:

a. prior to introducing said cement slurry into said bore hole contacting the exposed face of said permeable formation with a fluid loss composition which comprises an aqueous slurry of a clay stabilizer; a gelling agent; an acid soluble particulate material of about 100 mesh or smaller, in an amount ranging from about 1 to about 5 pounds per gallon of said aqueous slurry; a turbulence inducer; polyethyleneimine, and sufficient water to form a pumpable slurry; said gelling agent being employed in an amount sufficient to suspend said particulate solids in said slurry, and

b. introducing said cement slurry into said bore hole in contact with said permeable formation.

3,878,896

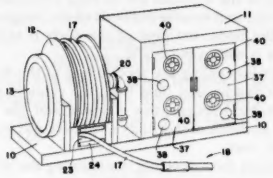
FIRE FIGHTING MODULE

Ernest M. White, Babylon, N.Y., and George S. Covarrubias, La Puenta, Calif., assignors to CBF Systems, Inc., Covina, Calif.

Filed Jan. 21, 1974, Ser. No. 434,889

Int. Cl. A62c *27/06*

U.S. Cl. 169—9 **9 Claims**



1. A mobile fire fighting unit comprising:

a. a supporting structure including a base, a container secured to the base, and a rotatable hose reel mounted beside the container for storing a flexible hose;

b. a plurality of storage tanks mounted within said container, each of the tanks containing a fire extinguishing liquid and a neutral gas under pressure, each of said tanks including an outlet pipe for filling and removal of its contents;

c. a valve connected to each of said outlet pipes, each valve coupled to a first gear for opening and closing the valve;

d. a plurality of manually operable handwheels mounted exterior of the container and each handwheel coupled to a second gear which meshes with the first gear for opening and closing said valves; and

e. a plurality of conduits, forming a manifold connected between each of said valves and one end of the hose for conveying the contents of the tanks to the hose, said conduits each including a one-way valve which permits liquid and gas to flow from the connected tank to the hose but prevents reverse flow.

3,878,897

PROCESS AND DEVICE FOR CREATING TRIGGERED STOP BARRIERS IN MINES AND IN VARIOUS UNDERGROUND WORKS

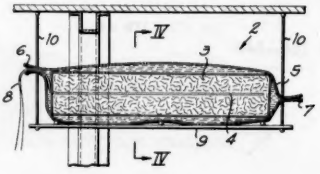
Pierre R. Goffart, Sterrebeek, Belgium, assignor to s.a.P.R.B. Societe Anonyme, Brussells, Belgium

Filed Sept. 25, 1973, Ser. No. 400,665

Claims priority, application Luxembourg, Sept. 25, 1972, 66154

Int. Cl. A62c *35/08*

U.S. Cl. 169—46 **12 Claims**



1. The method of extinguishing fires and explosions in an underground passage, comprising the steps of:

positioning a mass of frangible cellular material at a predetermined location in said passage;

filling the cells of said material with a fluent extinguishing medium; and

creating an internal pressure in said mass sufficient to expel the extinguishing medium therefrom and disperse the same in said passage.

3,878,898

HEAT DETECTION SYSTEM

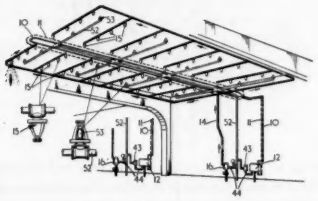
Ian Marshall, Shaw, England, assignor to Mather & Platt Limited, Lancashire, England

Filed Nov. 6, 1972, Ser. No. 303,909

Claims priority, application United Kingdom, Nov. 6, 1971, 51665/71

Int. Cl. A62c *37/02*

U.S. Cl. 169—60 **17 Claims**



1. A heat detection system for actuating a fire-fighting system, a fire alarm, or the like, the system comprising: a pressure sensitive actuator, a chamber containing fluid under pressure in communication with the actuator and serving as a detector, a thermally-insulated chamber also containing fluid under pressure and in communication with the actuator and serving as a compensator on low rates of temperature rise, the chambers being locatable at an area where it is desired to detect temperature rise.

3,878,899

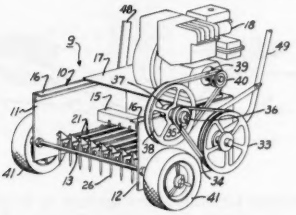
LAWN CULTIVATOR

Richard M. Jones, 273 Pimlico Way, Saginaw, Tex. 76079

Continuation-in-part of Ser. No. 228,575, Feb. 23, 1972, abandoned. This application May 31, 1973, Ser. No. 365,569

Int. Cl. A01b *45/02*

U.S. Cl. 172—21 **4 Claims**



1. A cultivator comprising:

a mobile frame,

a plurality of spaced arm means carried by said frame, each having a first end and a second end,

a head means pivotally coupled to the first end of each arm means,

a spike coupled to each head means,

head spring means coupled between each head means and its arm means for normally biasing each head means and hence each spike in a given position relative to its arm means,

each arm means being mounted for pivotal movement about a pivot shaft carried by said frame such that the first end of each arm means may be pivoted downward to move its spike into the ground and pivoted upward to move its spike upward from the ground,

separate arm spring means coupled to each arm means for normally biasing each arm means to normally bias its first end in the downward direction,

a cam shaft carried by said frame and having a plurality of cam means spaced along the length thereof and at different angular positions around said cam shaft,

each cam means being associated with one of said arm means,

power means for rotating said cam shaft in a given direction, said cam shaft being located to allow each cam means to engage the second end of its associated arm means to move said second end downward and hence its first end upward against the force of its arm spring means and then to release the second end of its associated arm means as said cam shaft is rotated in said given direction to allow said arm spring means to force the first end of said arm means downward to drive its spike into the ground.

3,878,900

SNOWMOBILE TRAIL GROOMER

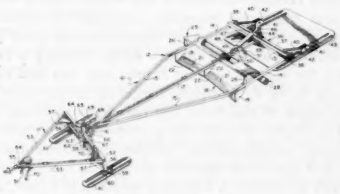
Pierre Paul Boisse; Jacques Bombardier, and Rejean Leclerc, all of Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada

Filed Oct. 17, 1973, Ser. No. 407,154

Claims priority, application Canada, Nov. 16, 1972, 156658

Int. Cl. A01b *51/00*

U.S. Cl. 172—145 **13 Claims**



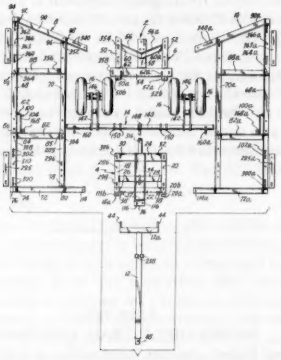
1. Apparatus for grooming a snow surface comprising an elongate frame having forward and rearward ends and skid means adjacent each end to support the frame for sliding movement upon the snow surface, a blade structure carried by said frame and extending transversely thereof, said blade structure having a generally horizontal lower edge, a horizontal compactor extending transversely of the frame and mounted thereon rearwardly of the blade structure, said compactor comprising a heavy, rigid, elongate member pivotally mounted on an axis transverse to said frame, abutment means on said frame defining a limiting position for said compactor, said limiting position being spaced rearwardly and downwardly of the pivotal axis such that the compactor is urged by gravity towards said limiting position but in operation may be displaced pivotally upwardly and rearwardly by the mass of snow to be compacted, and means for adjusting the height of said frame relative to said skid means.

3,878,901

EXTRA HEAVY DUTY MULTI-DISC HARROW WITH AUTOMATIC LEVEL CONTROL

Jackson P. Robertson, Sr., Rt. 1, Box 218, Columbus, Miss. 39701

Division of Ser. No. 96,562, Dec. 9, 1970, Pat. No. 3,759,332.
This application Apr. 25, 1973, Ser. No. 354,499
Int. Cl. A01b *63/22*
U.S. Cl. 172—413 **14 Claims**



1. An implement frame construction for carrying disc harrow elements adapted to be pulled with a drawbar connected to a tractor for working uneven as well as even surfaces of the earth, comprising: a unitary front frame section adapted to be connected to the drawbar, said front frame section being generally rectangular and having front and rear transverse members, and side members of equal length, connection means for said drawbar on said front transverse member, a generally rectangular unitary rear frame section having front and rear transverse members, and side members equal in length, an elongated unitary frame forming a left frame section and an elongated unitary frame forming a right frame section for said implement frame, said left and right frame sections being substantially longer in length than the combined length of said front and rear frame sections, said front and rear frame sections being assembled with said right and left frame sections at the opposite ends thereof so that said front and rear frame sections are spaced apart longitudinally, whereby to provide a complete implement frame, and securing means holding all of said frame sections in assembled relation in a manner to permit transverse and diagonal flexing of said implement frame, said implement frame providing a mounting for said disc harrow elements which permits said disc harrow elements to follow the contour of the earth as the tractor pulls the implement frame.

3,878,902

IMPACT TOOL

Susumu Matsuo, 196 Minami-Isshiki, Nagaizumi-cho, Suntogun, Shizuoka-ken, Japan

Filed Mar. 22, 1973, Ser. No. 343,651
Claims priority, application Japan, Apr. 3, 1972, 47-33357
Int. Cl. B25d *9/08*
U.S. Cl. 173—14 **5 Claims**

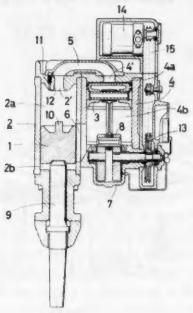
1. A pneumatic impact tool comprising in combination:

A. an air pump cylinder having a pump piston slidably disposed therein, and crank mechanism means for slidably moving said pump piston;

B. a tool cylinder having a free-piston slidably disposed therein, said tool cylinder having an aperture on the head portion thereof and a unidirectional port means which allows air to pass from said tool cylinder to said pump cylinder through said upper tube housing, but prevents air from otherwise passing, said free-piston having a male member disposed to pneumatically close the aperture;

C. an upper tube housing pneumatically connecting the upper portion of the air pump cylinder and, the aperture and unidirectional exhaust port of the tool cylinder;

D. a common side wall opening joining the lower portion of the air pump cylinder and the lower portion of the tool



cylinder said opening having a height less than the height of the free-piston and disposed to permit a free pneumatic opening when the free-piston is at the bottom dead point within the tool cylinder; and

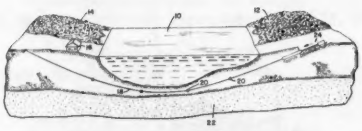
E. a chisel slidably mounted into the bottom of said tool cylinder and protruding therefrom, said chisel contacting the free-piston and movable thereagainst for placing the free-piston in position to pneumatically seal said common side wall opening whereby pneumatic movement of the free-piston is initiated.

3,878,903

APPARATUS AND PROCESS FOR DRILLING UNDERGROUND ARCUATE PATHS

Martin Dee Cherrington, 7398 San Joaquin St., Sacramento, Calif. 95825

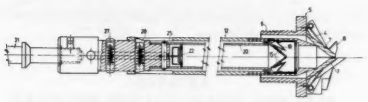
Filed Dec. 4, 1973, Ser. No. 421,548
Int. Cl. E21b *47/02*
U.S. Cl. 175—45 **22 Claims**



1. A method for drilling underground an inverted arcuate path beneath an obstacle comprising the steps of: providing a drill string; providing a drill head having at least one cutting drill bit at the end of said drill string operative to cut independent of rotation of said drill string, said drill head having an angular axial alignment with respect to the axis of said drill string; thrusting the drill string angularly downward into the ground at an angle other than vertical; powering said drill bit through said drill string simultaneously with said thrusting step; surveying the azimuth and declination of said drill string proximate said drill head at a plurality of intervals during said drilling and measuring the length of said drill string in the ground at a correspondent plurality of intervals from entrance into the earth at one side of said obstacle to exit from the earth at the other side of said obstacle whereby the path of said drill under said obstacle can be determined; and, varying said

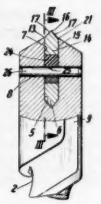
thrust of said drill string to change the radius of curvature of said inverted arcuate path.

3,878,904
CORE SAMPLING DEVICE
Phillip Richard Dobson, East Maitland, New South Wales, Australia, assignor to Gilbert Gray & Co. Pty. Limited, New South Wales, Australia
Filed June 5, 1973, Ser. No. 367,290
Claims priority, application Australia, June 9, 1972, 9290/72
Int. Cl. E21b 25/00, 49/02
U.S. Cl. 175—236 10 Claims



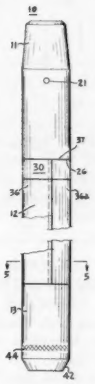
1. Apparatus for obtaining a core sample in a material, comprising a sample tube casing, a sample tube which is sized and shaped to locate within a bore of the casing with a clearance fit, closure means connected to the casing and positioned within the casing bore, and means permitting limited movement of the sample tube with respect to the casing to actuate said closure means to substantially seal a core receiving end of the sample tube and prevent loss of the sample.

3,878,905
DRILL, ESPECIALLY ROCK DRILL
Dietrich Schaumann, Weingarten, Germany, assignor to Hawera Probst Kommanditgesellschaft Hartmetall-Werkzeugfabric Ravensburgh, Ravensburg, Germany
Filed Apr. 9, 1973, Ser. No. 349,611
Claims priority, application Germany, Apr. 7, 1972, 2216760
Int. Cl. E21c 13/08
U.S. Cl. 175—383 36 Claims



36. In combination with a rock drill having a drill shank which provides a transverse slot at the drill head thereof including a bottom and a cutting blade of hard metal installed interchangeably and secured with a pin lying approximately at right angles to axis of the drill, the pin engaging in bores of the drill shank and cutting blade which fits in axial direction of the drill under preload against the bottom, the improvement therewith which comprises an elastic sleeve arranged between the pin and one of the bores, said elastic sleeve under preload pressing the cutting blade against the bottom of the slot, said elastic sleeve forming a bore for insertion of the pin and said elastic sleeve being installed in a bore larger than the bore for the pin, the bore for said elastic sleeve having an undersized diameter for engagement of the pin.

3,878,906
HEAVY DUTY SOIL SAMPLER
George W. Guest, Benton Township, Pa., assignor to Spraque & Henwood, Inc., Scranton, Pa.
Continuation-in-part of Ser. No. 337,082, March 1, 1973, Pat. No. 3,817,338. This application Apr. 24, 1974, Ser. No. 463,453
Int. Cl. E21b 9/16
U.S. Cl. 175—405 7 Claims

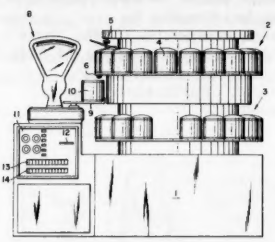


1. A heavy duty soil sampler which comprises
a driving head having an internal longitudinally straight sided bore and a lower terminus providing a lower driving shoulder,
a lower shoe having an internally threaded portion,
a hollow tubular barrel between said head and said shoe having an upper terminus in engagement with said first mentioned terminus,
said barrel having a lower threaded portion with which the internally threaded portion of said shoe is in detachable engagement,
said barrel having longitudinally split portions with neck portions thereon having external longitudinally straight sides extending upwardly from said second mentioned terminus in longitudinal slidable engagement in said bore, retaining means for one of said split barrel portions carried by said head and in detachable engagement with the neck portion of said split barrel portion,
the other of said split barrel portions being retained in position by the engagement of its neck portion in said bore, the interengagement of said barrel portions, and said shoe.

3,878,907
TINTING DEVICE
Ulrich Morick, Rinkerode, Germany, assignor to Basf Farben & Fasern Aktiengesellschaft, Hamburg, Germany
Filed Sept. 25, 1974, Ser. No. 509,034
Claims priority, application Germany, Sept. 28, 1973, 2348791
Int. Cl. G01g 19/22
U.S. Cl. 177—70 9 Claims

1. In a tint mixing apparatus with a supply shelf in the form of a lazy-susan, comprising a plurality of vertically disposed rotating supply decks for the paint containers holding the basic tints, each deck being provided with a controllable outlet valve, and further comprising a stirring system for each paint container and a metering scale with a support platform for the vessel receiving the paint mixture, said vessel being

located underneath the valve(s) of the paint containers, the improvement comprising:



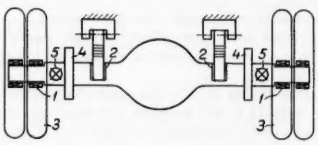
said supply decks (2,3) of supply shelf (1) supporting the paint containers (4), have means for moving vertically, and in that lower decks (3) are provided with recesses (7) at their rims, said recesses being larger than the support platform (9) of scale (8).

3,878,908

MEANS FOR MEASURING THE AXLE LOAD IN VEHICLES

Leif Andersson, and Lars-Erik Lindbäck, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 5, 1974, Ser. No. 448,369
Int. Cl. G01g *19/08, 3/14*
U.S. Cl. 177—136 **4 Claims**



1. In a vehicle having a stationary axle, having a wheel bearing (1) at each end, an attachment (2) for a load transferring member between the wheel bearing and the midpoint of the axle and a torque-transferring member (4) attached to the axle for transferring a braking torque thereto, said torque-transferring member (4) being positioned between the load-transferring member (2) and the wheel bearing (1), means for measuring strains in the axle comprising strain sensing transducer means (5) arranged in mechanical contact with the axle on a part of the axle situated between the wheel bearing and said torque-transferring member (4) and including means to measure the shearing forces in the axle by measuring the main strains oriented at an angle of 45° to the longitudinal direction of the axle associated with the shear strain.

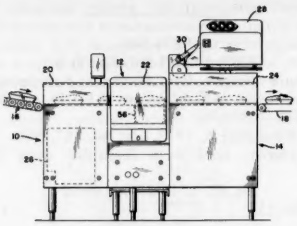
3,878,909

PACKAGING APPARATUS

Fritz F. Treiber, Centerville, Ohio, assignor to Hobart Corporation, Troy, Ohio

Division of Ser. No. 81,716, Oct. 19, 1970, Pat. No. 3,732,966.
This application Dec. 11, 1972, Ser. No. 313,618
Int. Cl. G01g *19/00, 21/22*
U.S. Cl. 177—145 **5 Claims**

1. Apparatus of the type described comprising:
a. means for weighing an article,
b. a weight responsive platform on said weighing means,
c. first article receiving means mounted on said platform,
d. second article receiving means mounted on and movable with said platform and extending in spaced relationship above said first article receiving means, and
e. means for lifting an article to be weighed from a position remove from said first article receiving means and placing



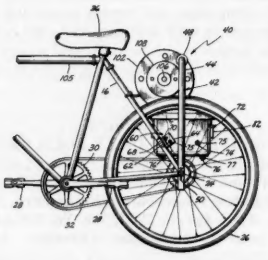
it on said first article receiving means beneath said second article receiving means.

3,878,910

ELECTRIC DRIVE UNIT FOR BICYCLES

Thomas J. Walker, Jr., 3939 Turquoise Cir., Eagan, Minn. 55122

Filed Dec. 5, 1973, Ser. No. 421,848
Int. Cl. B62m *7/08*
U.S. Cl. 180—34 **8 Claims**



1. An electric drive unit for bicycles comprising a frame for attachment to the bicycle to be propelled, an electric motor having a shaft and a drive wheel thereon, and means for mounting said motor on said frame for pivotal movement about a horizontal pivot axis so that said drive wheel frictionally engages a wheel tire at a location forwardly of a vertical line through the wheel axle when said frame is attached to the bicycle, the distance between said pivot axis and the axis of rotation of said drive wheel being greater than the radius of said drive wheel, and the distance between said pivot axis and the axis of rotation of said drive wheel being less than the distance between said pivot axis and the periphery of the wheel tire as measured in a radial direction.

3,878,911

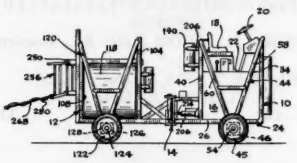
HYDRAULICALLY PROPELLED HIGH CLEARANCE AGRICULTURAL VEHICLE

William J. Nichols, 2006 W. 103rd Ave., Lowell, Ind. 46356

Filed Mar. 8, 1974, Ser. No. 449,262
Int. Cl. B62d *23/00;* **B60k** *7/00*
U.S. Cl. 180—51 **17 Claims**

1. An agricultural vehicle adapted to be self propelled on a supporting surface comprising a support frame, a source of hydraulic fluid under pressure mounted on the frame including a prime mover and a hydraulic pump provided with two ports, a yoke assembly having two tubular legs, each leg having a straight central portion and two end portions of equal length extending normally from the central portion thereof parallel to each other, said legs being mounted together at their ends with each leg disposed in a plane at an acute angle

to the plane of the other leg, said yoke assembly having a pair of hydraulic motors, each hydraulic motor being mounted on the yoke at a different end of each leg, and said hydraulic motors having drive shafts disposed on a common axis parallel to the central portions of the two legs, each of said hydraulic motors having a first port and a second port for connection into a hydraulic system, said first port being connected to the adjacent end of one of the legs and said second port being



connected to the adjacent end of the other leg, said yoke assembly being mounted on the support frame with the central portions of the legs disposed on the side of the frame opposite the supporting surface, each of the legs having an opening in the central portion thereof, means connected to each of the openings for coupling each opening to one of the ports of the hydraulic pump, and a wheel mounted on the drive shaft of each hydraulic motor.

3,878,912

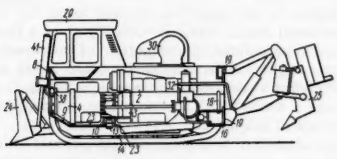
TRACTOR FRAME STRUCTURE

Jury Petrovich Samatov, prospekt Lenina, 22, kv. 30; Vladimir Vasilievich Emelyanenko, ulitsa Turistov 106, kv. 39; Nikolai Alexandrovich Litvinov, ulitsa Energetikov, 48, kv. 44; Ivan Savvateevich Kavyarov, prospekt Lenina 15, kv. 20, and Vladimir Konstantinovich Kajukov, Diskovy pereulok 32, kv. 21, all of Chelyabinsk, U.S.S.R.

Filed June 29, 1973, Ser. No. 374,950

Int. Cl. B62d *21/00, 55/00*

U.S. Cl. 180—53 R **3 Claims**



1. A tractor for use with a plurality of mounted and trailed attachments having a frame mounting all principal assemblies of the drive of said tractor and comprising, two lower longitudinal girders of said frame coupled fixedly together by a cross member; two upper longitudinal girders of said frame, each of which is mounted above a respective lower longitudinal girder at the topmost level of said tractor assemblies; side plates connecting each of said upper girders to its respective lower longitudinal girder; end plates interconnecting all said upper and lower longitudinal girders at the ends thereof and forming together with said side plates and said longitudinal girders a closed-perimeter rigid main frame, the outer surfaces of said main frame, including the top surface, providing carrying means for mounting trailed and mounted attachments.

3,878,913

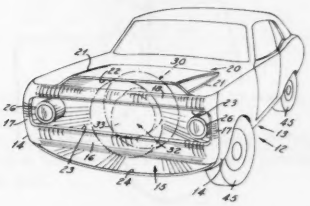
GENERATING SYSTEM FOR AN ELECTRIC VEHICLE

Donald C. Lionts, Madison Heights; George W. Armijo, Detroit, and Bernard F. Mehall, Royal Oak, all of Mich., assignors to CLC Corporation, Detroit, Mich.

Filed Dec. 15, 1972, Ser. No. 315,348

Int. Cl. B60k *1/00*

U.S. Cl. 180—65 R **5 Claims**

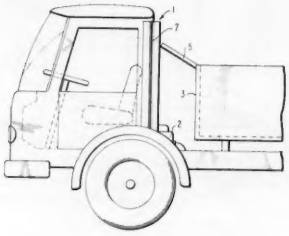


1. An electrical power system for driving an automotive vehicle, comprising a large capacity air scoop opening forwardly of a forward portion of said vehicle, said scoop being proportioned and acting to trap and assist in directing rearwardly through the scoop an air stream in a convergently restricted rearward path, an operator fan disposed rearwise of said air scoop and rotatively driven by said air stream on a forward-rearward axis, said fan comprising but a single stage of circumferentially spaced blades extending on individual axes radial of said fan axis, said stage being disposed in its entirety in a limited axial zone just to the rear of said scoop and closely adjacent said forward vehicle portion, and means for adjusting the angular pitch of said blades about said respective individual axes, a rotative generator, electrical battery means wired to said generator to be charged by the latter in the normal vehicle travel, an electrical motor driven by said battery means and operatively connected to traction means of said vehicle to propel the latter in said travel, a bumper structure extending relatively rigidly across the front of the vehicle just forwardly of said air scoop, said structure including a plurality of parallel rigidly connected bumper components spaced sufficiently from one another to afford distinct parallel openings of substantial size for an air inlet capacity to said scoop which is comparable in area to that of the forward tranverse area of the scoop, said bumper components being horizontal and at least two in number, and defining a vertically intermediate opening of major area forward of the fan axis and openings of lesser area above and below said intermediate opening, electrical circuitry operatively connecting said generator, battery means and motor, said circuitry including means affording a high frequency voltage supply switching connection between said generator and said battery means and motor enabling the battery means to be regeneratively energized during a travel mode in which the vehicle is rotatively driving the motor, as well as in a normal mode in which the motor is battery-powered for travel of the vehicle, an energy storing flywheel drivingly connected to said generator to rotate the latter and rotatively driven by said operator fan in the normal vehicle travel, and automatically releasable coupling means operatively interposed between said flywheel and operator fan, said coupling means normally driving said flywheel from said fan, said coupling means acting to operatively disconnect the same during continued rotation of said generator by said flywheel.

3,878,914
DRIVER CAB FOR TRUCKS

Hans-Adolf Gulich, and Bernd Schildhorn, both of Gaggenau, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Oct. 27, 1972, Ser. No. 301,269
Claims priority, application Germany, Oct. 28, 1971, 2153742
Int. Cl. B60k *11/00*
U.S. Cl. 180—89 A **16 Claims**

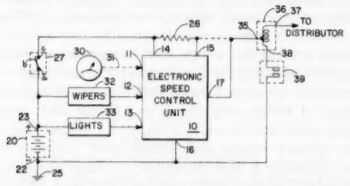


1. In a driver cab of commercial vehicles with an internal combustion engine arranged underneath the driver cab, said driver cab including a rear wall and lateral side walls, the improvement comprising air guide body means for preventing the flow of hot air and gases from the internal combustion engine along the rear wall to the lateral side walls of the driver cab disposed at the transition of the rear wall to the lateral side walls of the driver cab, said air guide body means including a first surface portion disposed along a respective lateral side walls of the driver cab and extending rearwardly and outwardly from the driver cab, a second surface portion disposed along the rear wall and extending outwardly and rearwardly of said cab and intersecting said first surface portion, said air guide body means extending generally in a vertical direction of the driver cab.

3,878,915
ELECTRONIC MOTOR VEHICLE SPEED CONTROL APPARATUS

Donald A. Purland, New Hope, and Alan M. Gustafson, Minneapolis, both of Minn., assignors to Digi-Gard, Inc., New Hope, Minn.

Filed Aug. 24, 1973, Ser. No. 391,460
Int. Cl. B60r *25/04*
U.S. Cl. 180—105 E **20 Claims**



1. An improved speed control apparatus for motor vehicles, comprising:

a. means for sensing the speed of a motor vehicle and for providing a sensed speed signal indicative thereof;

b. a single self-contained input means operable by an operator of the motor vehicle for receiving a plurality of operator input codes, each of said codes comprising a sequence of a plurality of code elements;

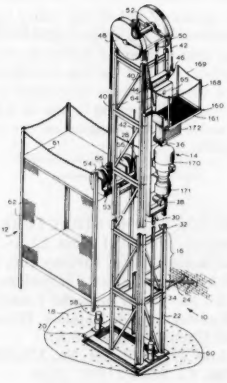
c. means operatively connected with said input means for selectively providing a plurality of maximum output speed signals in response to unique ones of said received operator input codes, wherein each of said produced maximum output speed signals is capable of being operatively responsive to more than one of said unique ones of said operator input codes; and

d. engine control means operatively connected to receive said sensed and said maximum speed signals for controlling the speed of the motor vehicle in response thereto.

3,878,916
RACK AND PINION DRIVE COUNTERBALANCED HOIST SYSTEMS

Gerome R. White, Jr., 19 Old Stable Rd., Demarest, N.J. 07627

Filed Feb. 7, 1973, Ser. No. 330,237
Int. Cl. B66b *9/20*; E04g *1/18*
U.S. Cl. 182—145 **37 Claims**



1. A hoist system comprising,

a substantially vertically disposed tower, lifting means adapted to be supported on said tower for conveying personnel and/or material vertically along a first path of movement defined by one portion of said tower,

counterweight means supported on said tower and being adapted for controlled powered movement vertically along a second path of movement defined by another portion of said tower,

means adapted to be connected between said lifting means and said counterweight means for causing related movement of said lifting means along said first path in response to powered movement of said counterweight means along said second path,

said lifting means including control means thereon,

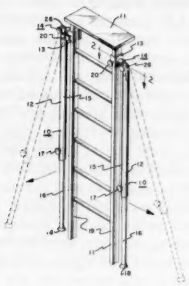
said hoist system further including means coupled to said counterweight means and being responsive to actuation of said control means on said lifting means for effecting controlled powered movement of said counterweight means along said second path,

said hoist system further including control means on said counterweight means, said means for effecting controlled powered movement of said counterweight means along said second path of movement being responsive to said last-mentioned control means for effecting controlled powered movement of said counterweight means along said second path independent of actuation of said first-mentioned control means on said lifting means.

3,878,917
ADJUSTABLE LADDER SUPPORT ATTACHMENT

Leo Robert McBride, 4308 Hoover, Boise, Idaho 83705

Filed July 16, 1973, Ser. No. 379,539
Int. Cl. E06c *1/22*
U.S. Cl. 182—172 2 Claims



1. A ladder having a pair of upstanding legs, a ladder support, comprising:

A ladder engaging sleeve which is slidably mounted distally from the uppermost terminal end of one of said legs and which is secured to said leg by a lock screw carried in said sleeve;

a sleeve-buttress coupling being suitably mounted to said sleeve, and including a tongue having one substantially upstandingly disposed face, a coupling wall having a face disposed adjacent said upstanding face of said tongue, and a lock screw disposed through said coupling wall into said tongue, said tongue being fastened to said ladder sleeve by means of a sidewardly projecting stud fastened to the outer terminal side of said ladder sleeve, and a sleeve fastened to said tongue and which is slidably engageable with said stud, said stud and said stud engaging sleeve being secured by a lock screw; and

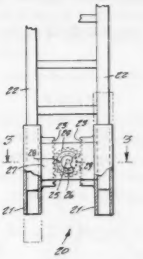
a buttress shaft including a hollow cylindrical member fastened at its uppermost terminal end to said coupling wall, and a telescoping cylindrical member which is slidably engagable within said hollow cylindrical member, both of said members being secured to each other by a lock screw which is threadably engagable with a hole in said hollow member to engage the outer wall of said telescoping member.

3,878,918
ADJUSTABLE LADDER

Anthony G. Basile, c/o George Spector 3615 Woolworth Building 233 Broadway, Brooklyn, N.Y. 10007

Filed Aug. 13, 1973, Ser. No. 387,730
Int. Cl. E06c *7/44*
U.S. Cl. 182—202 2 Claims

1. A ladder having lower spaced legs mounted adjustably on the lower end of said ladder for longitudinal movement relative to each other and said ladder whereby said legs can be positioned at different longitudinal positions relative to the lower end of said ladder, in combination with a rotary gear rotatably mounted at the lower end of the ladder between said legs, including teeth extending from each leg to engage said gear whereby rotation of said gear causes relative longitudinal motion of the legs, including means for selectively locking the gear to the ladder thereby preventing rotary motion and movement of the legs when positioned at desired locations wherein the lower end of the ladder includes parallel rails and said legs are mounted on rails members for parallel relative extending motion thereto, including a fixed panel transversely connected to said rails, said gear having a shaft rotatable mounted transversely on said panel, said gear being spaced from and parallel to said panel, said shaft being mounted axially slidable relative to both panel and gear, said means comprising coacting portions on said shaft and panel which interlock when the said shaft is slid axially to predetermined

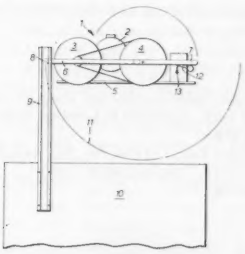


first position and wherein said portions are free of each other when the shaft is moved to a second position permitting rotation of the gear.

3,878,919
ELEVATOR CAR DOOR OPERATING AND LOCKING DEVICE

Alan Dewhurst, Hounslow, England, assignor to Dewhurst & Partner Limited, Hounslow, Middlesex, England

Filed June 18, 1973, Ser. No. 370,854
Claims priority, application United Kingdom, June 19, 1972, 28617/72
Int. Cl. B66b *13/16*
U.S. Cl. 187—52 3 Claims



1. Elevator car door operating means, comprising

a. linkage means for opening and closing the car door, said linkage means being arranged to adopt a locking position at least on closure of the car door so as to lock the car door in the closed position;

b. drive means for operating said linkage means to open and close the car door, said drive means including an electric drive motor, and power supply means for energizing said electric drive motor;

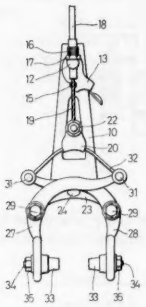
c. mechanical bias means for urging said linkage means out of said locking position; and

d. electromagnetic means for normally restraining movement of said linkage means from said locking position, including an armature mounted on said drive means for movement with said linkage means, and a stationary solenoid arranged opposite said armature when said linkage means is in the locking position, said solenoid being electrically connected with said power supply means, whereby upon the occurrence of a power failure with the elevator door closed, the solenoid is de-energized, thereby permitting said mechanical bias means to displace said linkage means out of the locking position.

3,878,920
CENTER-PULL BRAKE

Chiaki Fugii, 6-1 Nishikikuicho Nishiku, Nagoya, Japan

Filed Nov. 1, 1973, Ser. No. 411,340
Claims priority, application Japan, Jan. 22, 1973, 48-10096[U]
Int. Cl. B62l *1/16*
U.S. Cl. 188—24 2 Claims

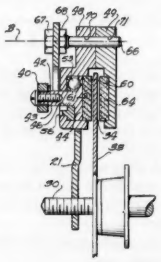


1. In a center-pull bicycle brake comprising: a brake base attached to a cycle frame; a pair of arms pivoted to said brake base at their intermediate portions; a pair of brake shoes secured on the lower ends of said arms; a flexible inner-wire engaging the upper ends of the arms so as to close and open said arms; a hollow and flexible outer-wire passed through by said inner-wire; the improvement in which a cam operated release means, mounted on said brake base and holding the lower end of said outer-wire, is adapted in a first adjusting position for relaxing said outer-wire and in a second operational position for straining said outer-wire.

3,878,921
BICYCLE BRAKE

Robert L. Kibler, Saint Joseph, and Daniel C. Brant, Watervliet, both of Mich., assignors to Lambert Brake Corporation, St. Joseph, Mich.

Filed Feb. 7, 1974, Ser. No. 440,378
Int. Cl. B62l *1/00*
U.S. Cl. 188—26 2 Claims

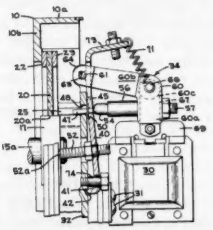


1. A disc brake for retarding the rotative motion of a bisided disc about an axle journaled upon a vehicle frame, comprising a brake attachment plate rigidly affixed to the vehicle frame at a plurality of points, and including plate hook means hooked over the disc axle, a plurality of smooth-surfaced axially elongated cylindrical moutning pins rigidly affixed to the brake attachment plate and having their axes oriented parallel to the disc axle, a brake housing adapted to surround the disc periphery at one spot and provided with smooth-surfaced housing apertures formed to mate with the housing pins, the housing being adapted to slide over the mounting pins for a limited distance in a direction parallel to the disc axle, a brake actuator back-up plate provided with spheroidally surfaced grooves having their centers of depression spaced from the actuator back-up plate periphery, a plurality of back-up plate mounting pins formed on the brake actuator back-up plate for engagement with mating pin recesses formed in the brake housing, a brake actuator plate provided with spheroidally surfaced grooves having their centers of depression spaced from the actuator plate periphery and normally arrayed in confronting relationship with the actuator back-up plate spheroidal grooves, actuator plate rotating means, a plurality of movable balls trapped between the actuator back-up plate spheroidal grooves and the actuator plate spheroidal grooves at positions spaced apart from each other, from the hhousing, from the actuator plate periphery, and from the actuator back-up plate periphery for causing the actuator plate to move axially as well as rotationally when the actuator plate rotating means is energized, a first brake pad rigidly affixed to the brake actuator plate and positioned to engage the disk upon appropriate axial motion of the back-up plate, and a second brake pad rigidly affixed to said housing on the opposite side of said brake disc and in opposing relationship to said first brake pad, said rotatable disc being squeezed between the first and second brake pads to retard disc rotation upon energization of said actuator plate rotating means.

3,878,922
BRAKE STRUCTURE

Richard H. McCarthy, West Allis, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 9, 1973, Ser. No. 414,548
Int. Cl. F16d *65/34*
U.S. Cl. 188—163 2 Claims



1. In a brake of the type wherein a disc that is keyed to a motor shaft is disposed between friction members that are movable axially of said shaft to couple the disc to a stationary member of a support structure, the improvement which comprises a solenoid supported from said structure, and an actuating mechanism having pressure means engageable with one of said friction members and a lever connected to the plunger of said solenoid, energization of said solenoid being effective to move said plunger and said actuating mechanism in a direction to apply force to said pressure means whereby said one friction member is pressed against said disc to lock said disc between said friction members, said support structure including a transverse stationary plate pivotally mounting said lever, a second lever pivoted on said plate and carrying said pressure means, and a compression spring between said levers for transmitting motion between said levers.

3,878,923

BRAKE ADJUSTERS

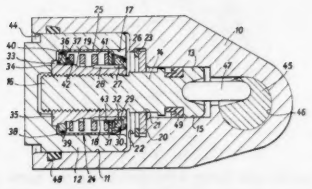
Glyn Phillip Reginald Farr, Leek Wootton, England, assignor to Girling Limited, Warwickshire, England

Filed Jan. 21, 1974, Ser. No. 434,897

Claims priority, application United Kingdom, Jan. 17, 1973, 4278/73

Int. Cl. F16d 65/56

U.S. Cl. 188—196 D 12 Claims



1. An automatic brake slack adjuster comprising a first non-rotatable member; a second rotatable member having a common thrust axis; a screw-thread connection between said first and second members; and means to inhibit rotation of said second member in the resting position of the adjuster, said rotation inhibiting means comprising a friction member and means rotatably coupling said friction member to said second member, said second member being axially movable relative to said friction member and said friction member having a friction surface, means defining a complementary non-rotatable friction surface and spring means urging said friction surfaces against one another when the adjuster is in its resting position.

3,878,924

AUTOMATIC RESETTING DEVICE FOR BRAKES

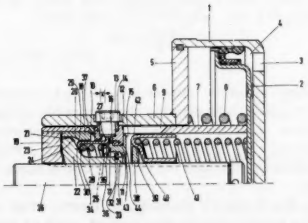
Gyula Nadas, Eching, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany

Filed July 12, 1974, Ser. No. 488,257

Claims priority, application Germany, July 23, 1973, 2337420

Int. Cl. F16d 65/66

U.S. Cl. 188—203 9 Claims



1. In an automatic resetting device for brakes particularly for railway vehicles the combination of non-rotatable sleeve axially displaceable in the braking direction in response to a braking force, an axially displaceable non-rotatable threaded shaft coaxially disposed within said sleeve, a coupling nut threaded upon said shaft and capable of rotary and axial movement thereon, means on said sleeve for defining a first rotary coupling with one side of said coupling nut and a second rotary coupling with the other side of said coupling nut, said rotary couplings being actuatable by axial displacement of said coupling nut with respect to said shaft, an axially displaceable control sleeve and spring means resiliently urging said control sleeve in the braking direction against said coupling nut, stop means engageable by said control sleeve to limit the axial displacement thereof within a predetermined range, the end of said spring means away from said control sleeve engaging a first stop fixed with respect to said control sleeve, and a second stop on said coupling nut spaced rearwardly of said first stop when the brake resetting device is in the inoperative position.

3,878,925

MOUNTING DEVICE FOR MAGNETIC RAIL BRAKES

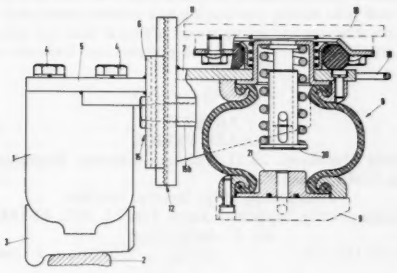
Gustaw Ignatoweicz, Munich, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany

Filed Jan. 18, 1974, Ser. No. 434,680

Claims priority, application Germany, Jan. 19, 1973, 2302539

Int. Cl. F16d 65/02

U.S. Cl. 188—206 R 4 Claims



1. A device for vertically adjustably mounting a magnetic rail brake on a part of a railway vehicle supporting a pneumatic bellows, comprising a first vertical clamping plate on the magnetic brake, a second vertical clamping plate on the bellows supporting part, there being interfitting horizontal indentations on the mutually facing surfaces of said clamping plates, and bolt means accessible from the outer side of the vehicle for clamping said plates together along said indentations on the mutually facing surfaces, vertical slide guide means on the mutually facing surfaces of said clamping plates.

3,878,926

CLUTCH AND BRAKE WITH RESILIENT OPERATOR

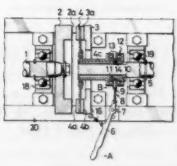
Kazuma Adachi, Yao, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Mar. 27, 1973, Ser. No. 345,335

Claims priority, application Japan, Mar. 30, 1972, 47-32398; Mar. 29, 1972, 47-31395

Int. Cl. F16d 67/02

U.S. Cl. 192—18 R 1 Claim



1. A clutch assembly comprising:

A. a power transmitting member formed with a friction surface on one side thereof and rotated by a drive shaft;

B. a stationary brake member having a friction surface

spaced apart from said friction surface of said power transmitting member and in facing relation thereto;

C. a clutch element interposed between both said friction surfaces and having friction surfaces adapted to be moved selectively into contact with said friction surfaces, said clutch element being supported on a driven shaft so as to be movable only in the axial direction thereof;

D. an operation lever for moving said clutch element in said axial direction;

E. connecting means for flexibly connecting said operation lever to said clutch element and for mitigating impactive engagement and disengagement of said clutch element, comprising a spring member which provides flexibility in said axial direction;

F. biasing means for urging said clutch element toward said brake member at all times; and

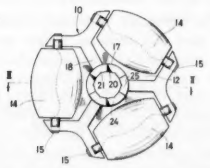
G. friction damper means for giving friction resistance to the engaging and disengaging movement of said clutch element, said friction damper means being so disposed as to exert a frictional force between said operation lever and a yoke pivoted to an end of said lever, and said lever and yoke having overlapping end portions connected by pivot means and spring means urging at least one pair of friction surfaces on said end portions into frictional engagement.

3,878,927

ROLLER DEVICE

Mashiro Murakami, 28-21 Oimazato 2-chome, Higashinariku, Osaka, Japan

Filed Jan. 5, 1973, Ser. No. 321,309
Claims priority, application Japan, Feb. 22, 1972, 47-18812
Int. Cl. B65g 39/04
U.S. Cl. 193—37 5 Claims



1. A roller device comprising a boss and a plurality of rollers equidistantly spaced apart along a circle concentrically located with respect to the boss and so supported as to be rotatable in a direction at right angles to the direction of rotation of the boss characterized in that the boss is provided with a plurality of support arms opposing the opposite ends of each of the rollers, each of the support arms being formed in its front and rear faces with vertical grooves having a depth approximately one half the thickness of the support arm and extending in opposing directions to provide a bore for supporting a roller shaft by the overlapping of the vertical grooves.

3,878,928

EXTRUDED COIN SLOT DEVICE

Henry J. Albright, West Des Moines, Iowa, assignor to Fawn Engineering Co., Des Moines, Iowa

Filed Dec. 10, 1973, Ser. No. 423,109
Int. Cl. G07f 1/04
U.S. Cl. 194—1 K 13 Claims

1. A coin slot device comprising:

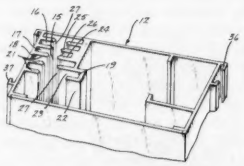
a housing;

a first wall connected to said housing at one end thereof and terminating in a free edge at the other end thereof;

a second wall connected to said housing at one end thereof and terminating in a free edge at the other end thereof, said second wall lying substantially in the same plane as said first wall;

a third wall, connected to said housing at one end thereof and terminating in a free edge at the other end thereof, said third wall being spaced from said first and second walls;

a fourth wall connected to said housing at one end thereof and terminating in a free edge at the other end thereof,



said fourth wall lying substantially in the same plane as said third wall whereby a first coin slot is formed between said first, second, third and fourth walls; and

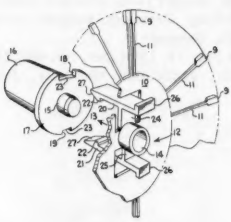
coin supporting means connected to said housing and spaced from said third and fourth walls to form thereby a second coin slot whereby a coin passing through the second coin slot is guided between said supporting means and said third and fourth walls.

3,878,929

TYPE DISC WITH INTEGRAL COUPLING DEVICE

Alfreds Orlens, Old Greenwich, and William W. Coville, Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 23, 1973, Ser. No. 418,291
Int. Cl. B41j 1/24
U.S. Cl. 197—53 3 Claims



2. A printing assembly containing a quick connect and disconnect coupling, said printing disc assembly comprising: a rotative drive shaft for rotatively moving a printing disc coupled thereto, said drive shaft having a hub portion and abutting surfaces upon which the printing disc is made to lock thereon; and

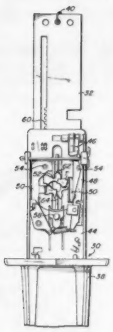
a printing disc having a plurality of flexible arms radially extending from a central disc section, each of said arms containing a character type at an outer end thereof, said printing disc having a quick connect and disconnect coupling disposed within said central disc section and integrally formed therewith, said coupling comprising two flexible members each supporting a substantially rigid flange member, said flange members each having locking means for locking upon said abutting surface of said drive shaft when said printing disc is assembled thereto, said coupling being operative by applying pressure to said flange members causing the flexible members of said coupling to flex and allow the coupling means of said flange members to lock upon said abutting surfaces of said drive shaft.

3,878,930

COIN CHUTE WITH DESTRUCTIBLE TOKENS

Mitchell Adam Hall, Fort Thomas, Ky., assignor to Monarch Tool and Manufacturing Company, Covington, Ky.

Filed Aug. 31, 1973, Ser. No. 393,670
Int. Cl. G07f *5/14*
U.S. Cl. 194—92 **17 Claims**



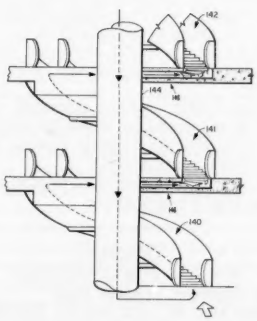
1. A coin chute comprising in combination: a housing; an apertured slide supported upon the housing for reciprocation between a position of retraction and a position of full advancement, the aperture of the slide receptive of a brittle token movable with the slide; means engageable with a portion of the edge of the token in one half circular portion thereof to advance the token; and abutment means operative upon predetermined movement of the slide intercepting forward movement of the token and engaging an edge portion of the token in the other half circular portion thereof whereby further movement of the slide to a position of full advancement shatters the token against said abutment means.

3,878,931

ARCUATE ESCALATOR SYSTEM

Gilbert D. Luna, 469 19th St., San Pedro, Calif. 90731

Filed Oct. 18, 1971, Ser. No. 190,214
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 R **29 Claims**



1. An escalator system for at least two successive floors comprising:

passenger conveyor means comprising successive stair step structures each between a different pair of floors, said stair step structures defining a continuous closed loop including exposed operative portions, and including a sequence of step segments disposed along the loop, and drive means adjacent the loop;

means defining stair step path transition regions of different configuration than the operative portions on each floor for the loop between each pair of structures;

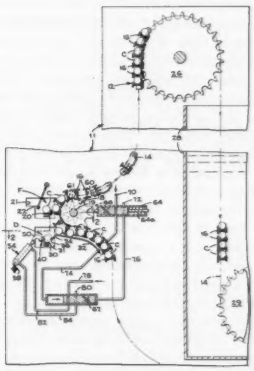
and means defining a single return path for the loop between the uppermost floor and the lowest floor.

3,878,932

CONTAINER ARRESTER FOR HYDROSTATIC COOKER

James L. Reimers, Saratoga, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 22, 1973, Ser. No. 325,702
Int. Cl. B65g *47/00*
U.S. Cl. 198—26 **2 Claims**

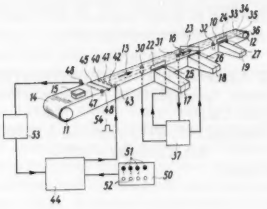


1. Mechanism for discharging a row of processed containers from the carriers of a cooker or the like onto a horizontally moving conveyor, said apparatus comprising a stationary platform for receiving containers directly from the carriers and along which the containers roll, and an arrester for first arresting a row of containers and then releasing the row to the conveyor; the improvement wherein said platform includes a stationary downwardly inclined guide lip having a discharge end portion with a free edge, said arrester comprising a rotatable eccentrically mounted elongate bar disposed substantially horizontally opposite the discharge end portion of said guide lip, means for advancing the arrester toward said lip and retracting it away from the lip, said arrester advancing means comprising means for partially turning said eccentrically mounted bar from its container releasing position to its container arresting position, said arrester retracting means comprising means for partially turning said eccentrically mounted bar back to its releasing position, said arrester when advanced cooperating with the end portion of said lip to suspend a row of discharged containers in axial alignment directly above said discharge conveyor between the end portion of said lip and the arrester, said conveyor being directly below and open to the gap between said lip and said arrester when the arrester is retracted, said arrester retracting means moving the arrester away from said lip by a distance sufficient to completely release and drop the discharged row of aligned containers for vertical free fall between the free edge of said discharge end portion of said lip and said arrester and directly onto said underlying discharge conveyor.

3,878,933
CONVEYOR SYSTEM AND CONTROL

Kunibert Bauer, Nagold, and Manfred Guttinger, Leinfelden, both of Germany, assignors to Sandco Limited, Ottawa, Canada

Filed Apr. 29, 1974, Ser. No. 465,348
Int. Cl. B65g *43/00*
U.S. Cl. 198—38 **16 Claims**

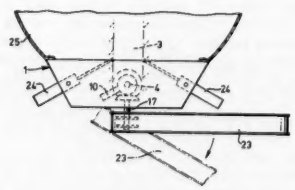


1. An article conveying system for conveying articles from a loading station to one of a plurality of receiving stations, comprising: a conveyor belt having an article conveying run for conveying said articles, said conveyor belt containing magnetizable material adapted to be selectively magnetized in discrete areas, the selective magnetization representing a selected one of said receiving stations; sensing means disposed at each of said receiving stations for sensing said selective magnetization, said sensing means at each of said receiving stations detecting a predetermined magnetization associated with that receiving station, means to discharge articles from said conveyor belt at the selected receiving stations in response to the respective sensing means, and magnetizing means for selectively magnetizing said conveyor belt to thereby select a predetermined receiving station to which each of said articles is respectively directed, said magnetizing means including electromagnet means having magnetizing windings through which magnetizing current selectively flows, a chargeable capacitor, circuit means including controllable semiconductor means for selectively enabling said magnetizing current to flow from said capacitor through said windings; and a charging circuit connected to said capacitor, said charging circuit including a positive-temperature-coefficient resistance means.

3,878,934
BOTTOM UNLOADERS

Sidney Ernest Proctor, High Wycombe, England, assignor to Austin Hoy and Company Limited, High Wycombe, England

Filed Nov. 15, 1973, Ser. No. 416,229
Claims priority, application United Kingdom, Nov. 28, 1972, 55001/72
Int. Cl. B65g *47/18*
U.S. Cl. 198—57 **10 Claims**

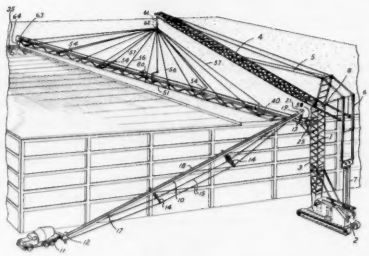


1. A bottom unloader for a storage silo, the unloader comprising a sweep arm conveyor, means mounting the sweep arm conveyor so that it can be swung across the base of the silo and remove material therefrom, the mounting means comprising a pivotal mounting for the sweep arm, drive means for the sweep arm conveyor comprising a drive shaft journalled in a housing which housing is pivotable about the pivotal axis of the sweep arm so that the disposition of the drive shaft can be altered, and said drive means being arranged to drive a conveyor disposed to receive material removed from the silo by the sweep arm conveyor.

3,878,935
TOWER-MOUNTED CONCRETE CONVEYOR

Robert F. Oury, Elmhurst, Ill., assignor to Rotec Industries, Elmhurst, Ill.

Filed June 4, 1973, Ser. No. 366,983
Int. Cl. B65g *37/00*
U.S. Cl. 198—88 **9 Claims**



1. An apparatus for conveying a flowable semi-fluid mass from a first point to a second distant point which comprises: a first elongated outwardly extending support member having a first and second end;

a second elongated substantially upright support member having at least one face, said face having a center;

means for pivotally connecting said first end of said first support member to said second support member;

conveyor support means slideably and adjustably mounted on said face of said second support member;

elongated discharge conveyor means for conveying said semi-fluid mass to said second distant point, said conveyor means having a first and second conveyor end and a first and second conveyor side, said conveyor means including a substantially horizontal truss member secured to and extending from said first conveyor side to substantially avoid horizontal bending of said conveyor means, said truss member having an outer edge;

means for vertically and horizontally pivotally connecting said conveyor means to said support means, whereby said conveyor means is rotatable about said second support member and the elevation of said conveyor means is adjustable;

multiple support cable means for supporting said conveyor means from said second end of said first support member, whereby said conveyor means is operable in a substantially horizontal position; and

means for conveying said semi-fluid mass to said first conveyor end from a supply source.

3,878,936
HOUSING FOR CONVEYORS

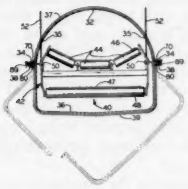
Fred William Niggemyer, Fremont, Ohio

Filed Mar. 31, 1972, Ser. No. 239,945
Int. Cl. B65g *15/08, 15/60*
U.S. Cl. 198—192 A **17 Claims**

1. A tubular housing for a conveyor comprising:

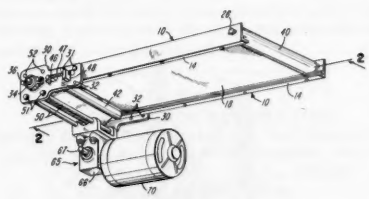
A. an elongated conveyor supported by a frame,

B. parallel supporting members for said conveyor extending along opposite sides of said conveyor and connected to said frame,
C. an upper cover section,
D. a lower pan section,
E. each section having outwardly extending longitudinal cooperating flanges,



F. plurality of spacers engageable with said flanges of at least one of said sections and extending inwardly for removable engagement with each of said parallel members for supporting both sides of said housing on said parallel supporting members, and
G. means for holding said sections together by clamping said cooperating flanges together.

3,878,937
ENDLESS BELT CONVEYOR SYSTEM
Charles Jerome Glaser; Donald L. Theobald, and James R. Glaser, all of 2501 Neff Ave., Dayton, Ohio 45414
Filed July 5, 1973, Ser. No. 376,602
Int. Cl. B65g *23/22*
U.S. Cl. 198—203 **7 Claims**

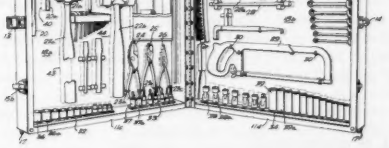


1. An improved conveyor system adapted to be assembled in various arrangements for use in compact spaces of different dimensions, comprising a set of parallel spaced elongated side rails having corresponding first end portions and opposite second end portions, said side rails also having substantially uniform cross-sectional configuration and inwardly projecting opposing integral flanges, at least one generally flat bed plate extending between said side rails and rigidly connecting said flanges, a tail roller extending adjacent corresponding said first end portions of side side rails and supported thereby, a set of generally parallel spaced end plates secured to the opposite said second end portions of said side rails, a drive roller extending between said end plates and supported thereby, an endless flexible conveyor belt extending around said tail roller and said drive roller, a set of parallel spaced support rods extending between said end plates and rigidly connecting said end plates, a bracket member having means defining openings for receiving said support rods, a motor drive unit mounted on said bracket member and having an output shaft connected to drive said drive roller and said conveyor belt, and means for arranging said support rods and said bracket member to provide for selectively positioning said motor drive unit in a plurality of different positions adjacent each of said end plates.

3,878,938
TOOTHPASTES
Susan Mary Venables, Ascot, and Charles Andrew Watson, Ruislip, both of England, assignors to Lever Brothers Company, New York, N.Y.
Continuation of Ser. No. 132,545, April 8, 1971, abandoned. This application Nov. 24, 1972, Ser. No. 309,535
Int. Cl. A61k *7/16*
U.S. Cl. 206—84 **3 Claims**

1. A toothpaste containing
a. glycerine in an amount of about 15 percent to about 40 percent by weight of the toothpaste;
b. water in an amount of about 8 percent to about 30 percent by weight of the toothpaste, said amount of water consituting about 20 percent to about 60 percent by weight of the liquid phase of the toothpaste;
c. chloroform in an amount of about 0.5 percent to about 4 percent by weight of the toothpaste; and
d. a corrosion inhibitor in an amount of about 0.1 percent to about 10 percent by weight of the toothpaste effective to inhibit corrosion of aluminium by the toothpaste, said corrosion inhibitor being selected from the group consisting of urea and biuret, said toothpaste being contained in an unlacquered aluminium tube.

3,878,939
FOLDING TOOL CASE
Charles L. Wilcox, 6333 S.W. 34th St., Miami, Fla. 33135
Filed Apr. 17, 1972, Ser. No. 244,831
Int. Cl. B65d *85/54;* **A47b** *81/00*
U.S. Cl. 206—373 **3 Claims**

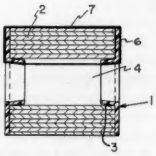


1. In a folding tool case, the combination comprising, a tool case having a pair of shallow, rectangular half-case members, piano hinge means connecting edge portions of said half-case members for relative opening and closing of the tool case to define an interior chamber, a toggle lever device for limiting the relative outward swinging motion of said half-case members to define an interior angle of approximately 90°, said half-case members each comprising a rectangular face panel and peripheral side panels, attachment means for releasably and individually securing the tools of a mechanic's set of tools against said insides of said half-case members when said panels are vertically disposed, shadow likenesses of the tools of the tool set being impressed upon the insides of said half-case members to illustrate their individual positions when secured by their attachment means, a plurality of ball rollers for rollably supporting said half-case members upon a horizontal surface when its face panels are in vertical disposition and locking means for securing said half-case members in relatively closed disposition.

3,878,940
COIL PROTECTOR

Robert W. Wittebort, Butler, Pa., assignor to Allegheny Plastics Inc., Coraopolis, Pa.

Filed June 4, 1973, Ser. No. 366,737
Int. Cl. B65d *85/67*
U.S. Cl. 206—416 5 Claims



1. A coil protector for protecting the edges of material formed in a coil having a central opening suitable for use in lifting and positioning the coil comprising:

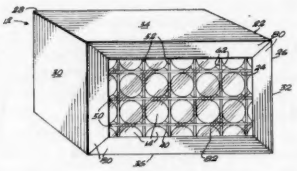
A. a substantially tubular core open over its diameter at both ends and having an outer tapered wall for facilitating engaging the core in the central opening of the coil; and

B. a surface radially extending from an end of the core for protecting the edges of the material forming the coil.

3,878,941
PACKAGE FOR CHRISTMAS TREE LIGHT BULBS

Gerald Kelner, 17880 N.E. 9 Pl., North Miami Beach, Fla. 33162

Filed Aug. 20, 1973, Ser. No. 390,077
Int. Cl. B65d *85/42*
U.S. Cl. 206—419 9 Claims



1. In combination,

A. a multi-compartment package for display and storage of a plurality of Christmas tree light bulbs and

B. a string of Christmas tree light bulbs in said package,

C. said string of Christmas tree light bulbs including

a. a plurality of similarly sized and shaped bulbs,

b. a plurality of electrical threaded sockets, and

c. conductor means,

d. said sockets being arranged in spaced relation along and electrically connected to said conductor means, and

e. said conductor means including a male plug at one end adapted to be connected to a source, and

f. one of said light bulbs being threadably engaged in each of the sockets of said string;

D. said package comprising,

a. a sleeve having a first end and a second end and defining opposing side walls and a top and bottom wall, said sleeve being characterized by an axial dimension between said ends greater than the axial length of the light bulbs and sockets,

b. an insert having a leading face and a trailing face sized for snug slidable insertion and in said sleeve, and said insert including a plurality of substantially equi-spaced wall portions extending between said top and bottom walls and between said side walls and defining a plurality of rows and columns of axially opening bulb receptacles in said sleeve between said wall portions, each receptacle being of a cross sectional area sized to nest one of said bulbs between confronting adjacent wall portions in parallel axial alignment, one of said bulbs being nested in each of said receptacles and all of said bulbs being in parallel alignment with their respective sockets facing in a common direction;

c. said inserts being of an axial length between said faces less than the axial length of said sleeve and, when said leading face is within said sleeve and parallel to the plane of said first end of said sleeve, said trailing face comprises septum means defining a main compartment between said trailing face and said second end, said sockets facing said main compartment,

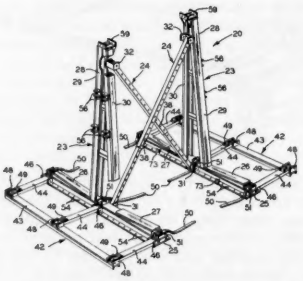
d. said main compartment being sized to receive and contain said conductor means electrically connecting said bulbs, and

e. means to contain the conductor means in said main chamber, and said insert in said sleeve, whereby the plurality of bulbs are visible through the first end of said sleeve and said male plug is accessible through the second end of said sleeve for connection to an electrical source to test the bulbs in situ.

3,878,942
ADJUSTABLE SHIPPING RACK AND MEANS FOR SECURING FLAT SHEETS

Ralph C. Hansen, Toledo, Ohio; Rae E. Vande Water, Jackson, and Owen W. Sherwin, Spring Harbor, both of Mich., assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Aug. 1, 1973, Ser. No. 384,620
Int. Cl. B65d *85/46*
U.S. Cl. 206—454 9 Claims



1. An adjustable shipping rack for transporting flat sheets in an inclined position on their longitudinal edges comprising:

a. At least two horizontally disposed and longitudinally movable bases;

b. A pair of centrally disposed L-shaped sheet supporting means affixed to the central portion of each said base wherein the shorter legs of said L-shaped means are inwardly and downwardly inclined at an acute angle to the horizontal base and the longer legs of the L-shaped means converge upwardly to meet at their upper ends; and

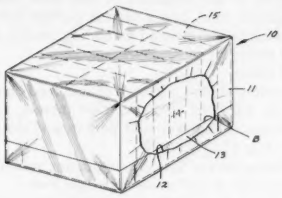
c. A pair of selectively extendable struts diagonally disposed between and pivotally connected to said bases and said converging legs of said L-shaped supporting means.

3,878,943

SHRINK WRAPPED TWO COMPONENT OPEN END PACKAGE AND SHIPPING CARTON

Jack A. Ryan; Ross A. Easter, and Jack J. Rejsa, all of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed May 24, 1973, Ser. No. 363,441
Int. Cl. B65d 65/00
U.S. Cl. 206—497 10 Claims



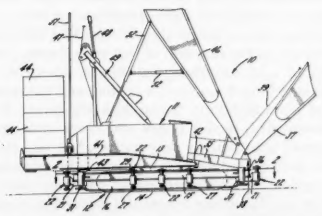
1. A package for case lot quantities of goods comprising in combination a plurality of packaged containers, a rectangular carton formed from at least two parts which form at least five sides of the package, said carton including a tubular sleeve portion comprising a sheet of paper based board having spaced parallel fold lines therein to define the edges of the carton walls, said sheet having its ends bonded together to define a tube, said carton also having a bottom portion including a flat, rectangular center section and upwardly extending side walls which are relatively short in height compared with the width and length of the package, the edges of the side walls being bonded to one another at their ends to define corners of the bottom portion of the carton and the lower edge of the tubular sleeve portion of the carton being cut to abutt against the upper edge of the side walls of the bottom to form a separation line extending around the entire circumference of the carton and being defined by the upper edge of the sleeve and a packaging film shrunk tightly about the product and the carton to press the sleeve down against the upper edge of the side walls to thereby hold the sleeve and carton bottom under compression along the separation line.

3,878,944

CRANE SUPPORT STRUCTURE

Dantel E. Beduhn, 2112 Markham St., and James G. Morrow, Sr., 107 Magnolia Ave., both of Manitowoc, Wis. 54220

Filed Aug. 30, 1973, Ser. No. 393,059
Int. Cl. B66c 23/62
U.S. Cl. 212—145 3 Claims



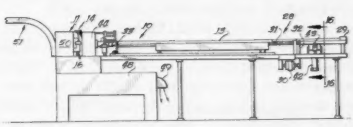
1. In a crane having an upper structure pivoted on a lower car body including means for moving the crane over the ground, the combination comprising, a pair of support beams secured to and forming a part of said lower car body, a track-like ring secured to said beams and horizontally surrounding said lower car body, a plurality of ring support arms pivoted for vertical movement on said lower car body and extending outwardly to underlie said ring as spaced points around the ring, some of said arms being pivoted on said support beams of said car body, means interengaging said arms and said ring to prevent the arms from swinging away from the ring, and a plurality of jacks one positioned at the end of each of said arms and sized to engage the ground when extended so as to lift the ring, the lower car body and the means for moving the crane relative to the ground.

3,878,945

METHOD AND APPARATUS FOR COUNTING AND PACKAGING CAN ENDS

Wallace W. Mojden, Hinsdale; Jose E. Davila, Chicago; George W. Hooper, Western Springs; Gerald M. Kwiatkowski, Dolton, and Howard W. Pantel, Jr., Woodridge, all of Ill., assignors to Fleetwood Systems, Inc., Countryside, Ill.

Filed Apr. 16, 1973, Ser. No. 351,639
Int. Cl. B65g 57/00
U.S. Cl. 214—7 9 Claims



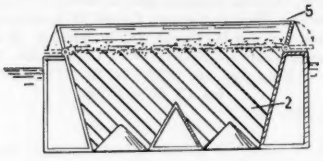
1. Can end handling apparatus capable of receiving a continuous flow of can ends and automatically counting and separating a stack of ends of a prescribed number posed in facewise, stacked relation for delivery to a packing station, or the like, said apparatus comprising: a receiving station including elongate trough means for handling a plurality of can ends in stacked, facewise engagement; means for advancing said can ends longitudinally of the trough means; monitoring means responsive to said can ends for counting the number of can ends passing a predesignated location, said monitoring means comprising a pair of opposed rollers having a plurality of longitudinal grooves formed therein, each of said grooves being sized to receive but a single can end edge, said rollers being disposed on opposite sides of said trough means at said preselected location to engage the stacked can ends, whereby upon said engagement of the ends by said rollers the ends will become separated from the adjacent ends of the stack with movement of said ends along said trough being retarded, restacking means disposed axially of said opposed rollers along said trough and receiving said separated can ends from said rollers, such that said rollers and said restacking means cooperating to define a gap in the stream of can ends passing along said trough, with said can ends passing one at a time through said gap, and counting means monitoring the passage of can ends passing said preselected location and providing a control signal upon the passage of a prescribed number of can ends; and separator means operatively connected with said monitoring means and capable of isolating a counted stack of can ends from the continuous stream of can ends, such that the downstream portions of the stack of can ends are disposed longitudinally of said separator means and the engaged counted stack, said separator means receiving said control signal from said monitoring means, which signal effects operation thereof.

3,878,946

APPARATUS FOR LOADING A HOPPER OF A SUCTION DREDGER WITH SAND

Jan De Koning, Amsterdam, Netherlands, assignor to N.V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal", Rotterdam, Netherlands

Division of Ser. No. 874,212, Nov. 5, 1969, Pat. No. 3,630,400.
This application June 15, 1971, Ser. No. 153,226
Claims priority, application Netherlands, Nov. 8, 1968, 6815921
Int. Cl. B63b *35/30*
U.S. Cl. 214—15 B 13 Claims



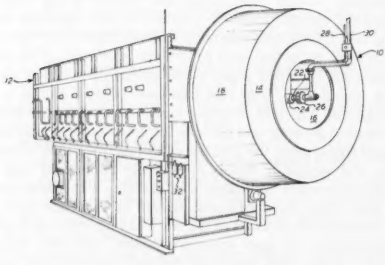
1. A floating suction dredger comprising, in combination:
a buoyant hull having a displacement sufficient to float a predetermined maximum load weight;
hopper means carried by said hull and having a volumetric capacity substantially greater than that predetermined volume of settled dredger spoil required to impose said predetermined maximum load weight on said hull;
suction dredger means carried by said hull for discharging a liquid suspension of dredger spoil in water into said hopper means whereby dredger spoil progressively settles in said hopper means correspondingly to increase the settled volume thereof in the hopper means toward said predetermined volume which imposes said predetermined maximum load weight on said hull;
drain means for draining off liquid from said hopper means; and
control means controlling said drain means for maintaining the volume of liquid above the settled dredger spoil at a value continuously to impose substantially said predetermined maximum load weight on said hull once such weight is reached and while said suction dredger means is operating whereby rapidly to achieve said predetermined volume of settled dredger spoil in said hopper means.

3,878,947

VOLUMETRIC FEEDER FOR ROTARY FURNACES

William I. Bayly, Livingston, N.J., assignor to American Gas Furnace Company, Elizabeth, N.J.

Filed Dec. 28, 1973, Ser. No. 426,773
Int. Cl. F27b *7/32*
U.S. Cl. 214—18 K 13 Claims



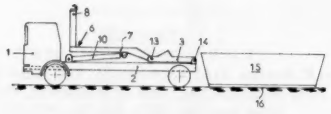
1. A volumetric feeder for rotary furnaces comprising:
a hopper for receiving work pieces, said hopper having an open front section, an inclined side section, and a rear plate section;
said inclined section connecting said front section to said rear plate section, said inclined front section further providing bias upon said work pieces towards the periphery of said plate section;
said plate section including a generally J-shaped slotted opening therein, said opening including a first portion roughly at the periphery of said plate and substantially tangential to it, and a second portion substantially perpendicular thereto and extending toward the interior of said plate;
a feed chute;
a measuring station adjacent to said feed chute and including an inlet and an outlet port therein, said feed chute communicating said inlet port to said slotted opening in said rear plate section;
a discharge means for communicating said outlet port with the mouth of said rotary furnace; and
a gate means for selectively allowing material to pass to said discharge means from said measuring station;
wherein said hopper, feed chute, measuring station and discharge means are substantially rigidly connected together and, further, wherein work pieces are fed to said furnace in measured batches as said volumetric feeder is caused to rotate.

3,878,948

SELF-CONTAINED DEVICE FOR HANDLING CONTAINERS ON A LORRY

Antoine Corompt, Saint-Elenne, France, assignor to Bennes Marrel, Saint-Etienne (Loire), France

Filed May 23, 1973, Ser. No. 362,984
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 R 4 Claims

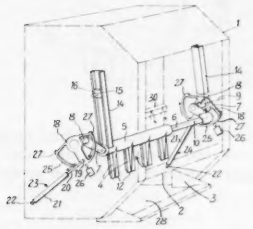


1. A container handling device adapted to be mounted on a lorry frame comprising a sub-frame having front and rear ends, first pivot means for pivotally connecting the rear end of said sub-frame on the rear end of said lorry frame, for pivotal movement of said sub-frame between a transport position parallel to said lorry frame and a loading and unloading position raised from said lorry frame, hoisting gantry means including lower arms having upper and lower ends and upper arms disposed substantially perpendicular to and secured to said upper ends of said lower arms, second pivot means pivotally interconnecting said lower ends of said lower arms and the front end of said sub-frame for pivotal movement of said lower arms between a transport position parallel to said lorry frame and a loading and unloading position raised from said lorry frame, stop means disposed adjacent said second pivot means to limit the pivotal movement of said lower arms relative to said sub-frame, jack means adapted to be pivotally mounted at one end on said lorry frame adjacent said upper ends of said lower arms when said lower arms are disposed in said transport position and third pivot means pivotally interconnecting the other end of said jack means and said lower arms intermediate the ends thereof.

3,878,949
DEVICE FOR LOADING MATERIALS INTO A CONTAINER

Marcel Victor Auguste Colin, Lagord, France, assignor to Societe d'Equipements, Manutentions et Transports (S.E.M-.A.T.), Paris, France

Filed Sept. 22, 1972, Ser. No. 291,275
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 **3 Claims**

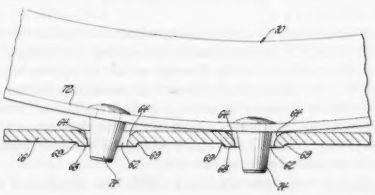


1. A device for loading and compressing material, notably town dry refuse, into a container on a collection vehicle, comprising a horizontal transverse crank shaft rotatably mounted in bearings provided in the lateral walls of a receiving hopper of said container, hydraulic rams associated with said crank shaft to impart thereto a circular movement around an axis of said crank shaft within said receiving hopper, a moveable comb comprising a hollow shaft mounted for loose rotation on said transverse crank shaft and provided with downwardly disposed sturdy teeth, slideways, rigid with said hollow shaft and disposed upwardly at each end thereof, and slide blocks along which said slideways can slide freely, said slide blocks being pivotally mounted on the side walls of the receiving hopper by means of pins parallel to the axis of said hollow comb shaft, and the teeth and said movable comb following a substantially elliptic closed circuit path within said receiving hopper when said crank shaft follows its circular movement.

3,878,950
ROCKER AND PLATFORM ASSEMBLY FOR SELF-DUMPING HOPPERS AND THE LIKE

Lawrence R. Quinn, Bloomfield Hills, and Max J. Bielenberg, Detroit, both of Mich., assignors to Roura Iron Works, Inc., Detroit, Mich.

Division of Ser. No. 264,652, June 20, 1972, Pat. No. 3,776,016. This application Aug. 2, 1973, Ser. No. 385,216
Int. Cl. B66c *23/00*
U.S. Cl. 214—130 R **2 Claims**

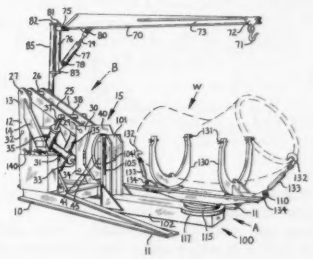


1. In a tooth-guided rocker and platform assembly for self dumping hoppers and the like wherein a toothed rocker is supported on a platform of high strength material having a plurality of linearly spaced holes therein whereby the teeth on the rocker move into and out of the holes with a substantially rolling motion as the rocker rocks across the surface of the platform for guiding and retaining the rocker on the platform, the improvement comprising the configuration of the material adjacent the periphery of each of said holes including a first section bounded by the platform and substantially in the plane thereof, and a second section comprising a reinforcing collar which defines inner and outer surfaces extending from the lower surfaces of the platform opposite the rocker supporting surface for increasing the thickness of the material surrounding said hole; said first section having a substantially cylindrical inner surface; said inner surfaces of said first and second sections forming a substantially inverted bell-shaped guiding surface surrounding said opening whereby the teeth on the rockers are guided into and out of said holes when the teeth engage said arcuate surface of said first section, said arcuate outer surface of said second section extending from the lower surface of the platform, and a flat bottom extending between said inner and outer surfaces of said second section, said flat bottom lying in a plane perpendicular to the axis of the opening and spaced from the lower surface of the platform.

3,878,951
WORK POSITIONER

Eddie B. Wagner, 13455 N.E. Failing St., Portland, Oreg. 97220

Filed Apr. 22, 1974, Ser. No. 462,670
Int. Cl. B65g *7/00*
U.S. Cl. 214—130 R **6 Claims**



1. In a work positioner having a cantilever beam supported at one end for inclination in opposite directions from horizontal, for raising and lowering in parallel movement, and for rotation about an axis parallel to the beam; a work holder beam mounted on the free end of said cantilever beam for rotation about an axis perpendicular to said cantilever beam which intersects said first axis, work holders on said work holder beam, means for rotating said cantilever beam in opposite directions about said first axis, a motor inside of said cantilever beam for rotating said work holder beam in opposite directions about said second axis, and means having sliding adjustment for said supported end of said cantilever beam to vary the distance between said cantilever beam and said first axis so as to place said first axis on the center of gravity of the combined mass of said cantilever beam, work holder beam and a work piece on said work holder beam.

3,878,952
SILAGE BUCKET HAVING A LOADING RAKE

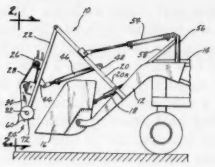
Karl E. Hueftle, Rt. 2, Box 85, Cozad, Nebr. 69130

Filed May 10, 1974, Ser. No. 468,911
Int. Cl. E02f *3/70*
U.S. Cl. 214—145 **8 Claims**

1. The combination of a boom having a material bucket on its outer free end and a loading rake, said loading rake comprising,

a first arm pivotally extending upwardly and outwardly over said bucket,

a second arm pivotally connected to the outer end of said first arm and extending downwardly and forwardly on the open side of said bucket, and



a cutting and raking means on the free end of said second arm for cutting material from a collection of material and raking it into said bucket.

3,878,953

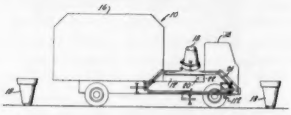
NON-STOP REFUSE COLLECTION METHOD

Marcel G. Stragier, 8201 Monterey Way, Scottsdale, Ariz. 85251

Continuation of Ser. No. 199,813, Nov. 17, 1971, abandoned, which is a division of Ser. No. 15,421, March 2, 1970, abandoned. This application May 29, 1973, Ser. No. 364,708

Int. Cl. B65f *3/02*

U.S. Cl. 214—152 **4 Claims**



1. A method of collecting refuse from a refuse container with a driver-operated vehicle, comprising:

advancing said vehicle, continuously, in an unfixed path past a station at which said refuse container rests;

engaging said container with means on said vehicle when said vehicle is at said station without manually handling said container; and

lifting and inverting said container to a raised position above a portion of said vehicle, said lifting and inverting step comprising:

sensing engagement of said container with sensing means independent of manual operations, and

operating intermittent lifting means on said vehicle automatically in response to said sensing.

3,878,954

BOAT LOADER AND UNLOADER FOR CAMPER BODY

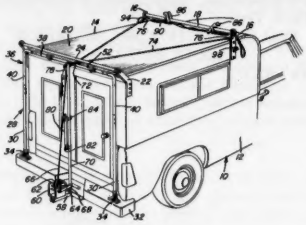
John W. Jessee, 2481 Roland Rd., Sacramento, Calif. 95821

Filed July 5, 1973, Ser. No. 376,376

Int. Cl. B60n *9/00*

U.S. Cl. 214—450 **15 Claims**

1. In combination with a vehicle including generally vertically spaced marginal portions, horizontal elongated support means extending along said upper marginal portion slightly above the latter and elongated support arm means having one end portion thereof pivotally supported from said lower marginal portion for generally vertical swinging of the other end portion of said support arm means between a position with said support arm means generally horizontally disposed and said other end portion thereof projecting outwardly from said lower marginal portion and an upstanding position with said other end portion swung upwardly to a position adjacent said upper marginal portion, means carried by said other end portion adapted for pivotal attachment to one end of a boat, said other end portion being supported from said one end portion for lengthwise extension and retraction relative thereto, means defining a limit of retraction of said other end



portion relative to said arm means and force means connected between said one end portion and said other end portion yieldingly biasing said other end portion toward its limit of retraction.

3,878,955

WHEEL-CHAIR TRANSPORT DEVICE FOR A PASSENGER CAR

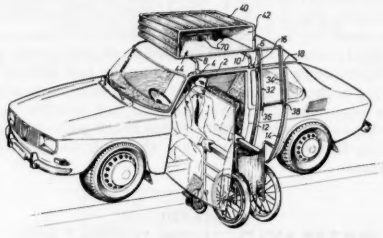
Per E. C. Udden, Box 90, 861 00 Timra, Sweden

Continuation of Ser. No. 95,638, Dec. 7, 1970, abandoned. This application Nov. 20, 1973, Ser. No. 417,673

Claims priority, application Sweden, Dec. 5, 1969, 16756/69

Int. Cl. B60r *9/00*

U.S. Cl. 214—450 **9 Claims**



1. A wheelchair transport device that is adapted to be mounted on a car, which comprises in combination:

a. a generally tubular wheelchair housing means which is adapted to substantially surround and house within it a wheelchair that is in a compactly folded condition,

b. moving means having an outer side and an inner side,

c. the outer side of said moving means being connected to a lower exterior portion of said wheelchair housing,

d. pivotal mounting means adapted to be mounted on the exterior of a car,

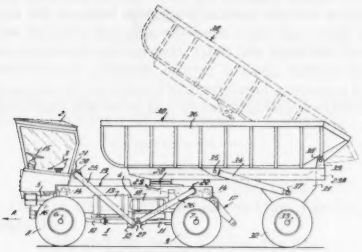
e. the inner side of said moving means being mounted in said pivotal mounting means for moving said wheelchair housing back and forth through an arc of approximately 90°, from a substantially horizontal position wherein said wheelchair housing is overlying the roof of a car to a substantially vertical position alongside the car with the lower end of the wheelchair housing located intermediate the top and bottom of the car,

f. engaging members disposed within the interior of said wheelchair housing means, said engaging members being adapted to engage a wheelchair that is located on the ground next to a vehicle, when said wheelchair housing is in said vertical position,

g. cable means associated with said engaging members for lifting a wheelchair into the interior of the wheelchair housing,

h. motor means for said moving means and said cable means
i. means for enabling actuation of said motor means from inside a car.

3,878,956
TRANSPORT DEVICES
Cornelis Van Der Lely, 7 Bruschenrain, Zug, Switzerland
Filed Aug. 31, 1972, Ser. No. 285,138
Int. Cl. B60p *1/04*
U.S. Cl. 214—501 **13 Claims**

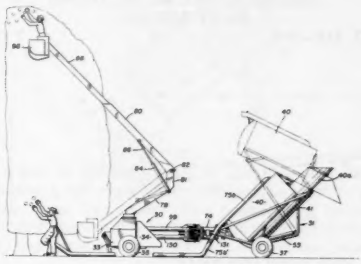


1. A transport device comprising a tractor having a frame and a forward driver cabin, a horizontal loading area supported by said frame and located to the rear of said cabin, a rotatable support on a separate frame being detachably mounted on said loading area, said separate frame being positionable to at least partially overlie said area and said first mentioned frame, said support comprising a fifth wheel having a shaft for coupling an implement frame means to said separate frame, whereby said implement frame means is displaceable with respect to said shaft, said separate frame having displaceable supporting elements that straddle said loading area and which are movable to ground supporting positions to hold the separate frame, rotatable support and attached implement apart from said tractor and above said loading area, whereby said tractor can be separated from the remainder of the device, said first mentioned frame having a plurality of front and rear lifting jacks that are received by said separate frame to connect same to the top side of said first mentioned frame.

13. A transport device as claimed in claim **1**, wherein said rotatable support is secured to a trailer implement comprising a tiltable loading trough.

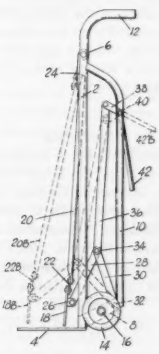
3,878,957
FRUIT HARVESTING MACHINE
Dietrich G. Rempel, Akron, Ohio, assignor to Rempel Enterprises Inc., Akron, Ohio
Filed June 16, 1972, Ser. No. 263,706
Int. Cl. B60p *1/60, 1/04*
U.S. Cl. 214—508 **16 Claims**

1. Apparatus for picking fruit from trees, including a supporting vehicle, an articulated hollow extensible boom having a lower arm rotatably mounted on said vehicle and an upper extensible arm pivoted on said lower arm and adapted to receive fruit into its outer end, said upper extensible arm comprising an outer boom arm and an inner boom arm telescopically slidable therein, an outer conduit within and secured to the outer boom arm and an inner conduit telescopically slidable in said outer conduit and secured to said inner boom arm, a hopper mounted on said vehicle communicating with the lower end of said lower arm, means for maintaining sub-atmospheric pressure in said hopper to create an air flow through the boom for conducting fruit through said boom to said hopper, a man-supporting bucket carried on the outer end of the upper arm of said boom, means for rotating said lower arm on said vehicle, means for raising and lowering said upper arm, and means for extending and retracting said upper arm.



9. Apparatus for picking fruit from trees as in claim **8**, in which power means are provided for bodily dumping said hopper, and the conduit means connecting the lower end of said boom to said hopper has a normally sealed separable butt joint to permit bodily dumping said hopper.

3,878,958
HAND TRUCK WITH UNLOADING LINKAGE
Fred C. Ring, 1817 Portage St., Kalamazoo, Mich. 49001
Filed Aug. 15, 1974, Ser. No. 497,577
Int. Cl. B62b *1/14*
U.S. Cl. 214—511 **4 Claims**



1. In combination with a hand truck having side rails and handles, and a load plate projecting forwardly from the bottoms of the side rails, wheels mounted at the lower ends of the side rails, and skids projecting upwardly from the rear of said wheels, truck unloading mechanism comprising;

a backing member movably supported in transversely extending relation to said load plate and in front of said side rails,

lever means connected to move said backing member forwardly across the major portion of the length of said load plate,

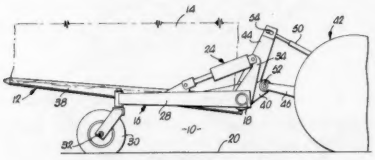
and an operating handle pivotally connected to the truck and said lever means and operable from the upper part of said truck to actuate said lever means to move said backing member forwardly upon upward motion of the handle.

3,878,959

STACK MOVER

Adin F. Holdeman, Hesston, and Melvin V. Gaeddert, Newton, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jan. 8, 1973, Ser. No. 321,785
Int. Cl. B66f 9/12
U.S. Cl. 214—766 **7 Claims**



1. A stack mover comprising:
a stack-receiving assembly including:
an elongated, normally horizontal cross tube, and
a plurality of forks extending laterally from said tube and rigidly mounted thereon;
a carrier for said assembly including:
an elongated shaft extending through the tube and rotatable relative thereto,
a pair of arms extending laterally from said shaft and rigidly mounted thereon, and
a ground-engaging support for each arm respectively disposed remotely from said shaft;
power means operably interconnecting the assembly and the carrier for swinging the arms up and down to raise and lower the shaft and the tube; and
structure limiting the extent of rotation of the tube relative to the shaft during operation of said power means whereby the forks are raised and lowered in response to raising and lowering of the shaft and the tube,
said tube being provided with tow means for connecting the same with a mobile vehicle and said structure including a crank on the tube having means for operably coupling the same with said vehicle.

3,878,960

GLASS CONTAINER WITH A SHRUNK-ON PLASTIC PROTECTIVE COVER

Bo Ragnar Jonsson, Hammar; Gunnar George Toll, and Bo Torsten Krister Bodelind, both of Bohus, all of Sweden, assignors to Aktiebolaget Platmanufaktur, Malmo, Sweden

Continuation-in-part of Ser. No. 261,970, June 12, 1972, abandoned, which is a continuation of Ser. No. 41,623, May 28, 1970, abandoned. This application Oct. 5, 1973, Ser. No. 403,981
Int. Cl. B65d 23/08
U.S. Cl. 215—12 R **10 Claims**

1. A plastic-covered glass container comprising a hollow member of glass material with at least its outer surface hardened, a cover of plastic shrunk onto at least the sidewall of said hollow member, and a layer of friction-reducing material between the shrunk-on cover of plastic and the sidewall of said hollow member.

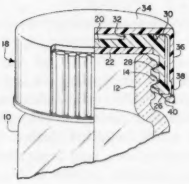
3,878,961

CHILD RESISTANT CLOSURES

John Joseph Curry, Westchester, and Carl William Lange, Des Plaines, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 28, 1973, Ser. No. 429,463
Int. Cl. B65d 55/02, 85/56; A61j 1/00
U.S. Cl. 215—219 **9 Claims**

1. A safety closure assembly for a container having thread-like formations below the container lip; and comprising an inner cap with a top closing wall to be sealed against the container lip and a depending skirt with external vertical rib means providing teeth and with internal thread-like formations cooperable with the thread-like formations on the container for closing and sealing the container upon rotation in one direction and for opening the container upon rotation in the opposite direction; and an outer cap with a top wall overlying the top wall of the inner cap and a depending skirt encircling the depending skirt of the inner cap and having internal rib means providing teeth normally spaced outwardly from the teeth on the skirt of the inner cap to permit rotation of the outer cap relative to the inner cap in the opening direction of rotation; means trapping the outer cap on the inner cap with permissive relative vertical movement between the top walls of the inner and outer caps; the adjacent enclosed wall surfaces of the inner and outer caps having the major portions thereof spaced apart a certain distance, circumferentially spaced projecting lugs integrally formed on the opposed adjacent enclosed wall surfaces of said inner and outer caps with



initially engageable abutment driving surfaces for rotating the caps in unison in the closing direction of rotation initially in automatic capping machines and subsequently by hand after initial opening of the container, and each of said lugs on said inner and outer caps being of substantially the same vertical height as said certain spaced-apart distance of said adjacent enclosed wall surfaces and being relieved from the free edge of the abutment driving surface leaving an edge surface of minimum extent at the adjacent surface of a cap top wall; and the skirt of the outer cap being sufficiently flexible at least at generally diametral areas for finger pressure thereon to shift the teeth of the outer cap inwardly into engagement with the teeth of the inner cap for rotation of both caps in unison in the opening direction and the outer cap being rotatable in the opening direction independently of the inner cap in the absence of sufficient finger pressure thereon and with the relieved surfaces of the lugs ratcheting over the lugs on the inner cap with the permissive relative vertical shifting of the cap top walls.

3,878,962

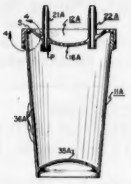
FLUID COLLECTION BOTTLE AND IMPROVEMENTS THEREIN

Legrand K. Holbrook, and David S. Ostler, both of Salt Lake City, Utah, assignors to Medical Development Corporation, Salt Lake City, Utah

Continuation of Ser. No. 857,161, Sept. 11, 1969, abandoned. This application Nov. 2, 1973, Ser. No. 412,329
Int. Cl. B65d 47/12
U.S. Cl. 215—309 **6 Claims**

1. A vacuum operated fluid collection bottle for recovering body fluids and comprising a container and a centrally concave cover secured thereto, said concave cover being essentially rigid and having an inwardly convex interior surface and an outwardly concave exterior surface, said concave cover being essentially rigidly constructed in such configuration,

prior to vacuum application, whereby to insure against cover collapse when a vacuum is applied, said bottle being provided



with a fluid admittance port and a vacuum port, both of said ports communicating with the interior of said bottle.

3,878,963
CONTAINER OR CAN BOTTOM
Elmer J. Knize, Chicago, Ill., assignor to Lippy Can Co., Ltd., Chicago, Ill.
Filed Dec. 20, 1972, Ser. No. 316,824
Int. Cl. B65d *7/42, 21/00*
U.S. Cl. 220—66 **7 Claims**

1. A container and a bottom for said container, said bottom having a central annular convexo-concave central portion having an annular peripheral edge, said central portion continuing from its peripheral edge with a generally U-shaped annular portion comprising a downwardly extending inner wall at the peripheral edge of said central portion, a first bend formed between said peripheral edge and said inner wall, a curved bend an upwardly extending outer wall spaced from the inner wall, with the upwardly extending outer wall continuing outwardly in a curved bend and sloping downwardly to form a downwardly inclined annular wall and with the outer edge of said bottom being secured to the body of the container and spacing said U-shaped annular portion inwardly of the body of the container, said last mentioned curved bend forming a second bend between said upwardly extending outer wall and said downwardly inclined annular wall, said second bend being on a horizontal plane above said first bend.

3,878,964
CASE AND HANDLE
Marlin E. Fogle, West Orange, N.J., assignor to Q-V.S. Inc., East Orange, N.J.
Filed Nov. 28, 1973, Ser. No. 419,683
Int. Cl. B65d *25/28*
U.S. Cl. 220—96 **1 Claim**

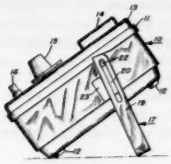
1. In combination,

a. a case having parallel side walls with flanges extending from said side walls,

b. a pair of bosses extending from the case side walls and spaced from said flanges, said bosses including flat side walls,

c. a U-shaped handle having leg portions spanning the case and slidable between the said flanges and bosses, said leg portions having aligned slots formed therein,

d. a pair of pins extending from the side walls of the case and into the said slots, said handle being slidably movable to a fully extended position relative to the case and then pivotable about the said pins to bring the leg portions into engagement with the said bosses, and



e. a pair of notches formed in said flanges, each notch having a wall aligned with the flat side wall of the associated boss, the notches being positioned to receive the ends of the handle leg portions when said leg portions are in engagement with the flat side walls of the bosses.

3,878,965
PRESSURE-VACUUM RELIEF VEHICLE RADIATOR CAP WITH FREE-TURNING SHELL
Billy G. Crute, Connersville, Ind., assignor to Stant Manufacturing Company, Inc., Connersville, Ind.
Filed May 13, 1974, Ser. No. 469,086
Int. Cl. B65d *51/16*
U.S. Cl. 220—295 **9 Claims**

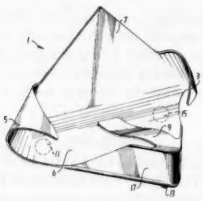
1. For use with a reservoir filler neck formed to provide an upwardly-facing peripheral seat and a downturned peripheral flange presenting a downwardly-facing cammed edge, a valved closure cap comprising a valving assembly including a domed member having an aperture in its upper end and radially-outwardly extending means at its lower end, a discoid support member having a central aperture, a discoid resilient diaphragm member having a central aperture, and a discoid retainer member having a central aperture, rivet means penetrating said apertures and gripping said members, annular gasket means resting on said support member, projecting radially outwardly beyond said support member and peripherally engaged by said diaphragm member, and shell means having a central perforation penetrated by said retainer member and loosely underlying the outer peripheral region of said retainer member, said shell member having a depending skirt carrying at least two radially-extending fingers engageable with the cammed edge of such a filler neck to force said gasket means into contact with such a seat and to flex said diaphragm.

3,878,966
NAPKIN HOLDER
Nicholas M. Haboush, 8808 Three Chopt Road No. 101, Richmond, Va. 23229
Filed May 25, 1973, Ser. No. 363,895
Int. Cl. B65h *1/00*
U.S. Cl. 221—33 **1 Claim**

1. A napkin holder and dispenser for holding a bundle of napkins in a generally L-shaped configuration and singly releasing an individual napkin from said bundle of napkins comprising:

a main support member comprised of a diagonally folded generally rectangular-shaped element wherein one of the resulting triangular sections serves as a horizontal base support member and the other resulting triangular sections serves as a vertical back support member, said back and base support members thereby forming a vertical-horizontal junction;

first restraining arm means affixed to the front of said base support member and adapted to extend over said bundle of napkins toward said vertical-horizontal junction and biased toward said base support member;



second restraining arm means projecting into the interior of the napkin holder adjacent said vertical-horizontal junction, so that a restraining influence is applied adjacent said junction of said back support member and said base support member for distorting the corners of said napkins as they are withdrawn from said napkin holder and holding said bundle of napkins in place and restraining the remaining napkins from following a selected napkin as said selected napkin is withdrawn from said bundle.

3,878,967

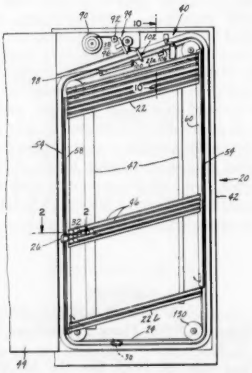
MEDICAMENT DISPENSER

Joel A. Joslin, Crestwood, and John C. Vogler, Manchester, both of Mo., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed Apr. 3, 1974, Ser. No. 457,679

Int. Cl. G07f *11/00*

U.S. Cl. 221—88 **10 Claims**



9. A method of dispensing a selected medicament from a dispenser containing a plurality of different medicaments, said dispenser having a plurality of bins each containing a plurality of carriers with a medicament container therein, and a movable holder for carrying said carrier, comprising the steps of providing an input signal to said dispenser indicative of the selected medicament, moving said holder to a position adjacent one end of a bin containing the selected medicament, transferring a carrier and medicament container from said selected bin to said holder, removing the medicament container from said carrier, discharging said medicament container from said dispenser, and returing said empty carrier to the opposite end of the same bin from which it was removed.

3,878,968

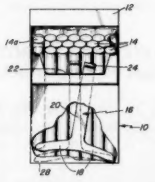
SELECTIVELY PIVOTED ARTICLE LIFTER

Prudencio M. Grinan, 116 Princeton St., East Boston, Mass. 02128

Continuation-in-part of Ser. No. 254,392, May 18, 1972, abandoned. This application Nov. 27, 1973, Ser. No. 419,335

Int. Cl. B65h *3/32*

U.S. Cl. 221—274 **5 Claims**



1. In a package of a plurality of elongate articles packaged closely together and in parallel, said package having means defining an opening to enable said articles to be selectively withdrawn along a direction paralleling their axes, an ejecting device comprising:

a flat main member having an upper end, a lower end and side edges extending upwardly from said lower end to said upper end, said main member being located between a wall of said package, said member lying between said wall and said articles in the package, the upper end of said main member being exposed centrally through the opening of said package;

platform means secured to the lower end of said member and lying adjacent the bottom wall of said package and beneath the ends of at least some of said articles, said main member and platform means defining a rigid, inflexible unit, to enable said device to be pivoted bodily in a plane substantially between said wall and said articles and about an end of the lower end of said member as a fulcrum whereby the platform means at the other lower end of said member may be raised,

each of the side edges of said main member being spaced from the side walls of said package when said device is in a central position to enable said member to be pivoted selectively about either of its lower ends toward either of said side walls from its central position.

3,878,969

RECEPTACLE MEANS FOR SOLID PROPELLANT USEFUL TO INFLATE AUTOMOBILE SAFETY DEVICES

Arthur Prochazka, Munich, and Siegfried Wolf, Taufkirchen, both of Germany, assignors to Bayern-Chemie Gesellschaft fur Flugchemische Antriebe mit beschrankter Haftung, Aschau, Germany

Filed Dec. 17, 1973, Ser. No. 425,233

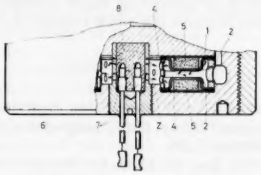
Claims priority, application Germany, Dec. 20, 1972, 2262346

Int. Cl. B67b *7/24*

U.S. Cl. 222—3 **4 Claims**

1. Apparatus for storing in a fixed supported position a plurality of bodies of solid propellant material particularly useful for inflating inflatable safety devices in automotive vehicles, said propellant material bodies being supported in a

manner to avoid premature ignition thereof while permitting gas produced by ignition caused by a predetermined condition to be transmitted to said inflatable devices to effect inflation thereof, said apparatus comprising receptacle means structured to be gas permeable on all sides thereof and adapted to



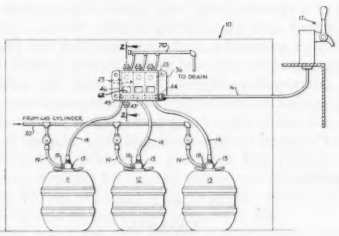
have said solid propellant bodies firmly and individually retained therein, and a central cut-out portion formed in said receptacle means and extending therethrough for receiving an igniting device that ignites said solid propellant bodies said bodies being spaced around said central portion.

3,878,970

BEER DISPENSING INSTRUMENTALITIES AND METHOD

James E. Nezworski, Waukesha, Wis., assignor to The Perlick Company, Inc., Milwaukee, Wis.

Filed Feb. 11, 1974, Ser. No. 441,140
Int. Cl. B67d *1/04*
U.S. Cl. 222—61 **21 Claims**



1. A control instrumentality to govern communication of a dispensing device with a container holding liquid under pressure, characterized by:

A. means defining a chamber through which liquid from the container must flow to reach a dispensing device, said chamber having inlet and outlet means in upstream and downstream portions thereof, respectively, to provide for such flow;

B. first valve means adjacent to the chamber outlet means to govern flow of liquid out of the chamber;

C. means to govern actuation of said valve means between open and closed positions, comprising detector means sensitive to the presence and amount of liquid in the chamber for effecting opening of said valve means in consequence of liquid in the chamber above a predetermined level, and to effect closure of said valve means in consequence of decrease in the amount of liquid in the chamber to a lower level that leaves it only partially filled with liquid;

D. second valve means to control communication between the chamber and the inlet means;

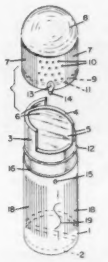
E. and means to effect closure of said second valve means in consequence of drop in pressure at the inlet means to a valve below that prevailing at the outlet means.

3,878,971

PLURAL-CHAMBER CONDIMENT DISPENSER

Gerald Allen Freedman, P.O. Box 503, Federal Station, Worcester, Mass. 01601

Continuation-in-part of Ser. No. 184,484, Sept. 28, 1971, abandoned. This application June 26, 1973, Ser. No. 373,679
Int. Cl. A47g *19/24*
U.S. Cl. 222—142.6 **8 Claims**



1. The improvement in plural-chamber condiment dispensers comprising a main body member and a cap member, where said body member is a hollow cylindrical tube, closed at one circular end, open at the other circular end, having a dividing wall means that extends longitudinally from said closed end to said open end through said body member, said dividing wall means sectioning said body member into two or more distinct chambers, said body member having for each said distinct chamber a cylindrical side wall opening that does not intersect said closed end, that does, essentially, intersect said dividing wall means, and that does intersect partially, the edge of said top end opening, and where said body member has a cylindrical arc plane wall section about the plane of said cylindrical side wall openings; where said cap member is a hollow cylindrical tube, closed at one circular end, open at the other circualr end, having a skirt of sufficient length to close said cylindrical side wall openings of said body member, and having a dispensing opening about its said cylindrical side wall skirt; where said body and cap members snap fit together and apart by way of an appropriate lip and groove means, where the bearing surfaces of said body and cap members are congruent in shape about the shape of a solid of revolution, said body and cap members being relatively rotatable to selective positions of closure where said cylindrical side wall openings of said body member are in various modes of registration with said dispense opening of said cap member, said modes of registration including a position of non dispensing where said dispensing opening of said cap member is registered with said cylindrical arc plane wall section of said body member, a position of exclusive dispensing for each of said distinct chamber of said body member where said dispensing opening of said cap member is registered exclusively with one and only one cylindrical side wall opening of said body members, and a position for similtaneous dispensing of adjacent body chambers where said dispensing opening of said cap member is similtaneously registered with said cylindrical side wall openings of said adjacent body chambers.

3,878,972

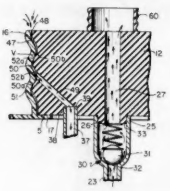
LIQUID MEASURING AND DISPENSING APPARATUS

L. Laslo Por, P.O. Box 37, Christiansted, St. Croix, V.I. 00820

Filed Aug. 29, 1974, Ser. No. 501,731
Int. Cl. B65d *37/00*
U.S. Cl. 222—207 **7 Claims**

1. An apparatus for dispensing fluids comprising a flexible container having an upwardly extending neck with inner and outer surfaces, a radial inwardly extending flange located adjacent to the lower portion of said neck and defining an opening into said container, a closure member having upper

and lower surfaces and removably engaging said inner surface of said neck while defining an air passageway therebetween, the lower surface of said closure member being in sealing engagement with said flange, a pressure responsive dispensing means carried by said closure member for controlling the discharge of fluids from said container when the pressure within the container is increased, a pressure responsive air



inlet means mounted on said closure member for admitting air into said container when the pressure therein is less than atmospheric, said closure member having an air passage bore providing communication between said air inlet means and the air passageway, whereby atmospheric air entering said container follows a tortuous path through the air passageway and the opening in said closure member and said air inlet means into said container.

3,878,973

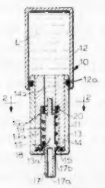
METERED DOSE DISPENSER

Pasquale R. Riccio, Salem, N.H., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 31, 1973, Ser. No. 411,265

Int. Cl. G01f *11/38*

U.S. Cl. 222—319 **8 Claims**



1. A measured dose dispensing device comprising a piston-cylinder means for containing a body of liquid to be dispensed and having a piston member and a cylinder member, one member being engageable by the finger of a user to move it toward the other member for placing the liquid therein under pressure, said other member of said piston-cylinder means having a larger diameter recess therein at the end remote from said one member and a smaller diameter bore extending between said larger diameter recess and the space within said piston-cylinder means which contains said body of liquid, and a spring loaded stem extending through and movable through said recess and having a hollow stem portion on the end away from said one member of said piston-cylinder means and projecting out of said other member for engagement by another finger of the user to exert pressure thereon in the opposite direction from the pressure on the one member, said hollow stem portion being movable into and out of said other member of said piston cylinder means and having a solid stem portion with the same cross-sectional shape as said smaller diameter bore and movable into said bore when said stem is moved toward said one member for closing off the communication of said recess with said body of liquid during the initial movement of said stem into said one member, said hollow stem portion having an aperture therein which when the stem portion is out of the recess is out of communication with said recess and near the end of the movement of said hollow stem portion into said recess is placed in communication with said recess, whereby an amount of liquid corresponding to the volume of said recess is dispensed through said hollow stem portion.

3,878,974

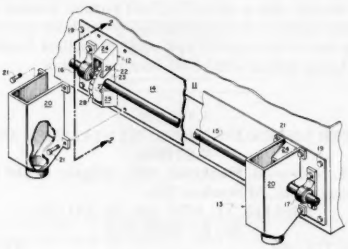
PARTICULATE MATERIAL DISPENSER

Ruben S. Vasquez, Gilroy, Calif., assignor to Clampco, Incorporated, Salinas, Calif.

Filed June 26, 1973, Ser. No. 373,791

Int. Cl. A01c *15/08*

U.S. Cl. 222—342 **6 Claims**



1. In a dispenser of particulate material: a plate adapted to be part of a chamber wall, said chamber adapted to contain such material, said plate having formed therein a main slot, and a shroud attached to and extending from said plate to an extended and open end; said shroud having formed therein a branch slot angularly disposed to said main slot, said shroud being C-shaped in cross section along said branch slot and said branch slot and its edges being generated by the opposed ends of such C-shaped sections; and said slots adapted to receive closely therein and therethru a rotatable and peripherally toothed disc.

3,878,975

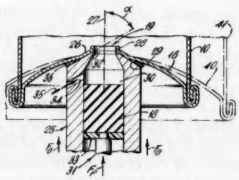
PRESSURE OPERATED DISPENSING CONTAINER WITH SPECIAL INLET FOR A PLUG SEAL

Robert S. Schultz, Old Greenwich, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.

Division of Ser. No. 305,304, Nov. 10, 1972, Pat. No. 3,827,212. This application Mar. 11, 1974, Ser. No. 450,177

Int. Cl. B67d *5/37*

U.S. Cl. 222—389 **10 Claims**



1. A pressure chargeable dispensing container adapted to be sealed by a resilient cylindrical plug supplied via a plugging nozzle having a convex tapering surface, said container comprising a cylindrical body and an upwardly domed bottom

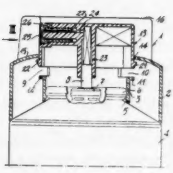
closure wall with a generally central charging opening, said bottom wall and body being chime-connected, said opening being defined at the small end of an inwardly tapering and locally more sharply concave mouth formation limited to the central region of said domed closure wall and having circumferential symmetry about the opening, said mouth formation having a taper substantially matching that of the plugging nozzle, and the diameter of said opening substantially matching the exit-bore diameter of the plugging nozzle; whereby as a result of mating convex and concave surfaces, a plugging nozzle having a convex surface of taper substantially matching that of said mouth and further having an exit-bore diameter substantially matching the minimum diameter of said mouth, may be self-centering into accurate coaxial fit to and registration with the opening of said mouth, independently of diameter variations of said chime connection, so that a resilient cylindrical plug of diameter exceeding the opening diameter may be accurately inserted in the opening, with the relatively uncompressed and externally exposed end of the plug largely received in the concavity of said mouth.

3,878,976

DISPENSING PUSHBUTTON CAP, PARTICULARLY FOR AEROSOL CONTAINERS

Giancarlo Giuffredi, Milan, Italy, assignor to Coster Tecnologie Speciali S.p.A., Milan, Italy

Filed Aug. 8, 1973, Ser. No. 386,702
Claims priority, application Italy, Aug. 10, 1972, 28058/72
Int. Cl. B68d *83/14*
U.S. Cl. 222—402.13 **1 Claim**



1. A dispensing cap for aerosol containers comprising:
a casing having an aperture and having means for snap coupling said casing to the container; and
a movable pushbutton for operation of a valve of the container, said pushbutton being movable within said aperture and having two extensions within said aperture, at least one of said extensions having a detent for engaging said casing adjacent said aperture to restrict movement of said pushbutton in one direction, said aperture being shaped to enable said extensions to project therein but to restrict movement of said pushbutton in a direction opposite said one direction, the sides of said extensions coacting with the periphery of said aperture to prevent rotation of said pushbutton.

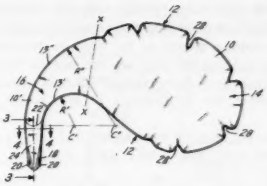
3,878,977

FLEXIBLE CONTAINER WITH ARCUATE SELF-SEALABLE SPOUT

Richard S. Carlisle, Rye, N.Y., assignor to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 231,288, March 2, 1972, Pat. No. 3,815,794. This application June 10, 1974, Ser. No. 477,755
Int. Cl. B65d *35/08*
U.S. Cl. 222—491 **27 Claims**

1. A container for fluids having a body and a spout extending generally arcuately from said body, said spout having congruent opposed walls of supple, imperforate material and being defined by laterally-spaced seams uniting said walls and disposing them in substantially face-to-face contact when said spout is empty, said seams including first, correspondingly-curved seam elements defining substantially eccentric arcs which extend divergently, at least from about an intermediate portion of the spout, generally toward said body, said container being dimensioned and configured to provide means for forming a releasable seal across said spout at said intermediate portion thereof, first sections of said opposed walls between said first seam elements being free of interconnection and



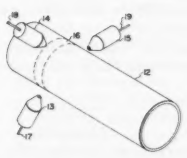
being adapted to readily become distended by contained fluid, such distension causing said first wall sections to converge into sealing abutment with one another, with the center lines of said first wall sections adjacent said abutment forming an angle of less than about 60°, and with second sections of said opposed walls coextending from said abutment with the center lines thereof in general alignment with the center line of one of said first wall sections and at an angle to the center line of the other of said first wall sections, whereby said spout can be sealed without auxiliary means.

3,878,978

METHOD FOR SEVERING TUBULAR FILM

Harold H. Martinek, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Filed Nov. 30, 1973, Ser. No. 420,471
Int. Cl. B26f *3/00*
U.S. Cl. 225—1 **7 Claims**



1. A method for severing a flexible tubular film of polymeric material which comprises the steps of cooling the tubular film by impingement of a cold fluid at a predetermined locus continuously until the material becomes extremely brittle and said fluid flexes the tubular film to sever it.

3,878,979

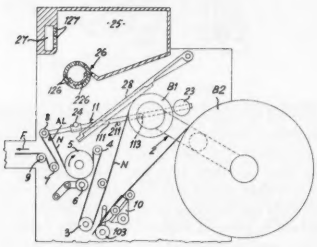
DEVICE FOR FORMING RESERVES OF A TAPE

Athos Cristiani, Via Luigi, Sturzo, n., 7, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,570
Claims priority, application Italy, Mar. 2, 1973, 12494/73
Int. Cl. B65h *17/42*
U.S. Cl. 226—11 **6 Claims**

1. Apparatus for maintaining uninterrupted the feed of flexible material tape advancing longitudinally, pulled by a controlled tractive force along a feed path from a main tape feed source where the tape is unwound from a bobbin as it is fed to a machine which requests a continuous and regulated tape feed, comprising tape pulling means for withdrawing the

tape from the main feed source, a variable loop forming mechanical tension regulator engaging the tape and forming a loop thereof in said feed path downstream of a tape pulling means, the size of the loop being automatically changed by the mechanical tension regulator in response to fluctuations of the actual rate of feed requested by the machine compared to a predetermined rate of feed by said tape pulling means to keep a constant tractive force in the tape, a storage means suitable for accommodating a tape reserve in the shape of a continuous tortuous and loose tape, said storage means having a tape lead-in and lead-out opening with the periphery of a rotary pneumatic drum driven at a controlled speed to move the tape from the pulling means to the storage area and suction port means for holding the tape on the side of the path leading to the machine and downstream of said mechanical tension



regulator, the retaining force exerted on the tape by pneumatic suction through said port means permitting the tape to slide forward on said port and providing a forward motion frictional resistance substantially equal to the predetermined rate of tractive force controlled by said mechanical tension regulator, said tension regulator and said storage means being operatively associated with each other so that said mechanical regulator moves the loop to a position where said pneumatic drum and said pneumatic port means removes said tape from said mechanical regulator, sequence coordinating means for rotating said pneumatic drum at a peripheral speed which is higher than the maximum speed of said tape pulling means to form a temporary tape reserve in said storage means while the suction from said port means maintains the tractive force on the tape which continues to be fed from said storage means to the machine.

3,878,980

PLASTIC REINFORCED PRODUCE CONTAINER

Walton B. Crane, 4346 Matilga Ave., Sherman Oaks, Calif. 91403

Continuation-in-part of Ser. No. 193,874, Oct. 29, 1971, abandoned, Continuation-in-part of Ser. No. 227,798, Feb. 22, 1972, abandoned, Continuation-in-part of Ser. No. 238,320, March 27, 1972, abandoned. This application Nov. 20, 1972, Ser. No. 307,962

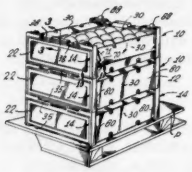
Int. Cl. B65d *5/22, 21/02*

U.S. Cl. 229—34 R **16 Claims**

1. In a generally rectangular container with rigid rectangular, reinforcing end frames at opposite ends thereof, the container having rectangular bottom, side and end walls, and lids which are hinged to the upper edges of said side walls, said rectangular end frames comprising integral, coplanar, upper, lower and side flanges parallel with the end walls of the container and lying thereadjacent, and rectangular integral upper, lower and side flanges, integral with and projecting perpendicularly from said coplanar flanges from the outer margins thereof, whereby to provide reinforcing caps receiving therein the corresponding end walls of the container and end portions of said bottom walls, with the perpendicular side flanges thereof lying closely adjacent said side walls of said container; said upper and lower perpendicular flanges having horizontal upwardly facing and downwardly facing surface areas, respectively,

integral elevated spacer means extending vertically upward from generally outer end portions of said upper perpendicular flanges and having thereon horizontal stacking surfaces spaced above said upwardly facing flange surface areas of said upper perpendicular flanges by at least the thickness of a lid, said upwardly facing surface areas on said upper perpendicular flanges lying longitudinally inward of said spacer means,

the downwardly facing horizontal surface portions on the lower perpendicular flanges, directly below said spacer means, also comprising stacking surfaces,



said stacking surfaces being located above and below the lids and bottom walls, respectively, of the container for stacking engagement of a plurality of the containers, rigid end frame directly to rigid end frame, at said stacking surfaces when the lids are closed,

said lids having end edges which, in regions laterally opposite said elevated spacer means, are located laterally inwardly thereof, the upwardly facing surface areas on said upper perpendicular flanges being at substantially the level of the underside of the hinged lids when said lids are closed, and

said lids having tabs which project laterally and overlie said upwardly facing surface area on said upper perpendicular flanges at a level below said stacking surfaces on said spacer means when the lids are closed.

3,878,981

CENTRIFUGAL SEPARATOR WITH SLIDE VALVE FOR INTERMITTENT DISCHARGE OF SLUDGE

Theodor Teckentrup, Oelde, Germany, assignor to Westfalia Separator AG, Oelde (Westfalen), Germany

Filed Feb. 20, 1973, Ser. No. 334,165

Claims priority, application Germany, Feb. 23, 1972, 2208490

Int. Cl. B04b *1/14*

U.S. Cl. 233—20 A **12 Claims**

1. In a centrifugal separator constructed for intermittent discharge of sludge, comprising:

a. a rotatably mounted separator drum having at least one discharge opening in the outer periphery of the drum for discharge of sludge from the drum,

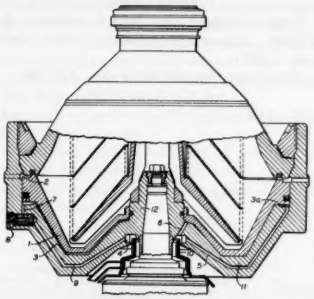
b. an annular slide valve coaxially disposed in the drum extending from the hub of the drum to the outer periphery thereof and being slidable between an open position for discharge of a sludge through the discharge opening and closed position for retension of sludge within the drum,

c. at least one radially extending annular control chamber for the slide valve for receiving control fluid for shifting of the valve between said valve positions,

d. means for controlled release of control fluid from the control chamber at the outer periphery of the drum, for emptying of fluid from the control chamber for reverse shifting of the slide valve between said valve positions,

e. a capture chamber adjacent to the axis of the drum for receiving control fluid and a conduit communicating the

capture chamber with the control chamber for delivery of control fluid to the control chamber,



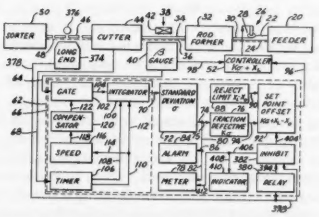
the improvement which comprises:

f. said conduit which communicates the capture chamber with the control chamber, connecting with the control chamber adjacent the outer periphery of the control chamber.

3,878,982
AUTOMATIC TARGET MANAGEMENT METHOD AND SYSTEM

David C. Hoffman, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Nov. 16, 1973, Ser. No. 416,456
Int. Cl. G06g *7/66*
U.S. Cl. 235—151.1 **23 Claims**



1. Apparatus for determining the statistical dispersion of a measured property of successive units of processed material comprising

a detector of the property of said processed material for producing detection signals systematically related to said property,

integrating means for integrating said detection signals over successive intervals corresponding to respective units of processed material to develop measurement signals,

means for measuring the speed of said processed materials by producing a speed signal indicative of said speed,

compensating means responsive to said speed signal for compensating said measurement signals for changes in speed,

first discriminator means for comparing measurement signals indicative of said property to a first threshold signal and producing a first discriminator output signal indicative of whether or not said measurement signals exceed said first threshold signal,

first feedback means responsive to said first discriminator output signal for producing said first threshold signal at such level as to cause a first predetermined fraction of said measurement signals to exceed said first threshold signal,

second discriminator means for comparing said measurement signals to a second threshold signal and producing a second discriminator output signal indicative of whether or not said measurement signals exceed said second threshold signal,

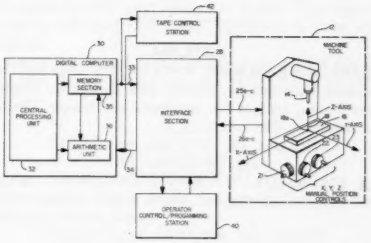
second feedback means responsive to said second discriminator output signal for producing said second threshold signal at such level as to cause a second predetermined fraction of said measurement signals to exceed said second threshold signal, and

combining means for differentially combining said first and second threshold signals to produce a dispersion signal indicative of the dispersion of said measured property.

3,878,983
SYSTEM FOR NUMERICAL CONTROL OF A MACHINE TOOL

Samuel M. Hamill, III, 105 Gilson Rd., Scituate, Mass. 02066, and James C. Kilbane, 49A Cedar Rd., Belmont, Mass. 02178

Filed Oct. 29, 1973, Ser. No. 410,315
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.11 **101 Claims**



1. In a numerically controlled machine tool system including a machine tool, said machine tool having a cutting element and a workpiece positioning table, wherein said cutting element rotates about a first axis and translates along said first axis, and wherein said workpiece positioning table has a planar top surface lying in a reference plane perpendicular to said first (z) axis and said table translates along a second (x) and a third (y) axis, said second and third axes lying at right angles in said plane, a control system for controlling said translating motions of said cutting element and said workpiece positioning table comprising:

A. an operator controlled positioning control means including axes drive means for positioning the cutting element of said machine tool relative to the point of intersection of said x and y axes to a succession of spatial points, said points having x, y, and z coordinates defined with respect to said point of intersection of said x and y axes and said reference plane, wherein each of said spatial points corresponds to a point at which a subsequent machining operation is to be performed,

B. a position encoding means for generating x, y and z coordinate data signals, each being representative of the corresponding coordinate of the current position of said cutting element with respect to said intersection point and said reference plane,

C. an operator controlled X–Y sequence entry means including a digital computer, interface and operator control/programming station, said X–Y sequence entry means being for generating and storing in the memory of said digital computer memory at least one X–Y sequence of digital data comprising a set of digital signals for an associated one of said succession of spatial points, said set of digital signals being related to:

the x, y coordinate data signal representative of the associated one of said succession of spatial points,

D. an operator controlled Z sequence entry means including said digital computer, said interface and said operator control/programming station, said Z sequence entry means being for generating and storing in said memory of said digital computer at least one Z sequence of digital data comprising a set of digital signals for an associated one of said succession of spatial points, said set of digital signals being related to:

the z coordinate data signal representative of the associated one of said succession of spatial points,

E. a sequence transformation means including said digital computer, said interface, and said operator control/programming station, said transformation means being for selectively transforming each of said stored X–Y and Z sequences of digital data into a corresponding series of encoded machine tool control signals, wherein each of said series is for directing the relative position of said cutting element toward an associated one of said spatial points, and

F. a computer controlled positioning means responsive to said control signals and including said axes drive means, said computer controlled positioning means for successively controlling the relative position of said cutting element to be at each of said spatial points

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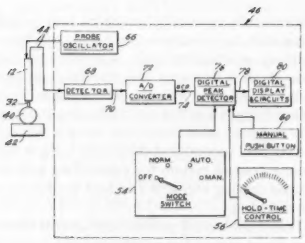
3,878,984

DIMENSION-MEASURING APPARATUS AND METHOD

Hippocrates Sotiropoulos, Media, and Euripedes Tsaprazis, Upper Darby, both of Pa., assignors to Olympic Metronics, Inc., Delaware, Pa.

Filed Dec. 19, 1973, Ser. No. 426,013
Int. Cl. G01b 7/12
U.S. Cl. 235—151.32 **6 Claims**



1. Apparatus for measuring, and for producing indications of, an extreme value of a dimension of an object, comprising:

dimension-measuring means for scanning a dimension of at least a portion of said object to produce dimension-representing signals representative of successive values of said dimension as said object is being scanned;

electrical means responsive to said signals for producing a digital display of a number representing an extreme value of said dimension encountered during said scanning;

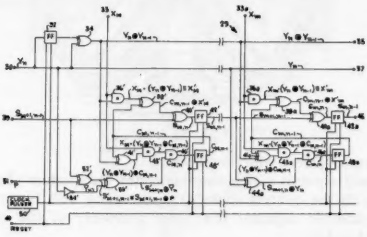
said electrical means comprising hold means for retaining said digital display of said number for a display time sufficiently long for ready visual reading thereof, and timing means for automatically resetting said electrical means at the end of said display time to terminate said display of said number and to prepare said electrical means for similar measuring of said extreme value of a next subsequent object.

3,878,985

SERIAL-PARALLEL MULTIPLIER USING BOOTH'S ALGORITHM WITH COMBINED CARRY-BORROW FEATURE

Robert C. Ghest, Saratoga, and John S. Springer, Los Gatos, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 30, 1973, Ser. No. 420,397
Int. Cl. G06f 7/54
U.S. Cl. 235—164 **12 Claims**



1. A digital multiplier of the type taking multiplicand bits in parallel, said multiplicand bits in two's complement notation, numbered in a bit position hierarchy as follows, $X_M, \ldots, X_{m+1}, X_m, X_{M-1}, \ldots X_1, X_0$ where M is a number designating the position of the most significant X bit, m is a number designating the position of the mth bit, and **0** is a number designating the position of the least significant X bit, said multiplier taking multiplier bits serially least significant bit first with multiplier bits in two's complement notation, numbered in a time interval hierarchy as follows, $Y_N, \ldots, Y_{n+1}, Y_n, Y_{n-1}, \ldots Y_1, Y_0$, where N is a number designating the time of occurrence of the least significant Y bit, and n is a number designating the time of occurrence of the nth bit, comprising,

a plurality of connected multiplier cells, each of said cells corresponding to a multiplicand bit position, each cell being substantially identical and having input means for receiving a parallel input multiplicand bit X_m, a serial input multiplier bit Y_n, and a partial product bit from an adjoining higher order cell, $S_{m+1,n-1}$, each cell further having first circuit means for forming a borrow-carry bit, $C_{m,n}$ and second circuit means for forming a partial product bit, $S_{m,n}$, said first and second circuit means including logic gate means and storage means arranged in a configuration with respect to said carry-borrow bit $C_{m,n}$ as defined by the equation:

$C_{m,n} = ((X_m \cdot (Y_n \oplus Y_{n-1})) \oplus C_{m,n-1}) \cdot (S_{m+1,n-1} \oplus Y_n)$ and with respect to said partial product bit $S_{m,n}$ as defined by the equation:

$S_{m,n} = S_{m+1,n-1} \oplus C_{m,n-1} \oplus (X_m \cdot (Y_n \oplus Y_{n-1}))$ said cell having means for outputting said partial product but $S_{m,n}$.

3,878,986

FULL ADDER AND SUBTRACTOR CIRCUIT

Masataka Hirasawa, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 9, 1973, Ser. No. 377,190
Claims priority, application Japan, July 10, 1972, 47-68190; July 10, 1972, 47-68191
Int. Cl. G06f 7/385
U.S. Cl. 235—175 **10 Claims**

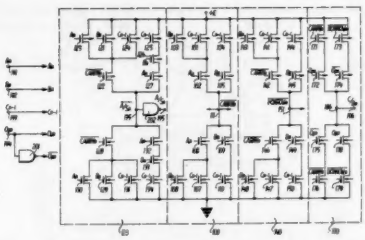
1. A full adder and subtractor circuit comprising:

a first terminal for receiving a first operand signal,

a second terminal for receiving a second operand signal,

a third terminal for receiving an information of preceding bit signal,

a fourth terminal for receiving an operation instruction signal,
first logic means having an input and an output,
second logic means having an input and an output,
third logic means having an input and an output,
fourth logic means having an input and an output,
an inverter having an input and an output,
means connecting said first operand signal to the input of said first logic means,
means connecting said second operand signal to the input of said first logic means,
means connecting said information of preceding bit signal to the input of said first logic means,
means connecting said first operand signal to the input of said second logic means,



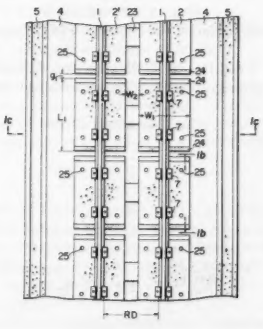
means connecting said second operand signal to the input of said second logic means,
means connecting said information of preceding bit signal to the input of said second logic means,
means connecting the output of said first logic means to the input of said second logic means,
means connecting said second operand signal to the input of said third logic means,
means connecting said information of preceding bit signal to the input of said third logic means,
means connecting the output of said first logic means to the input of said third logic means,
means connecting the output of said first logic means to the input of said fourth logic means,
means connecting said operation instruction signal to the input of said fourth logic means,
means connecting said operation instruction signal to the input of said inverter,
means connecting the output of said inverter to the input of said fourth logic means,
means connecting the output of said third logic means to the input of said fourth logic means,
said first logic means comprising:
means to add said second operand signal and said information of preceding bit signal to yield a first signal,
means to combine said first signal and said first operand signal in AND gate fashion to yield a second signal,
means to combine said information of preceding bit signal and said second operand signal in AND gate fashion to yield a third signal,
means to add said second signal and said third signal to form a fourth signal,
means to invert said fourth signal to form a fifth signal,
said fifth signal comprising the output signal of said first logic means,
said second logic means comprising:
means to add said first operand signal and said second operand signal and said information of preceding bit signal to form a sixth signal,
means to combine said sixth signal and said fifth signal in AND gate fashion to form a seventh signal,
means to combine said first operand signal and said second operand signal in AND gate fashion to form an eighth signal,
means to combine said eighth signal and said information of preceding bit signal in AND gate fashion to form a ninth signal,
means to add said seventh signal and said ninth signal to form a 10th signal,
said 10th signal comprising the output of said second logic means,
said third logic means comprising:
means to add said second operand signal and said information of preceding bit signal to form an 11th signal,
means to combine said 11th signal with said fifth signal in AND gate fashion to form a 12th signal,
means to combine said second operand signal and said information of preceding bit signal in AND gate fashion to form a 13th signal,
means to add said 12th and 13th signals in to form a 14th signal,
means to invert said fourteenth signal to form a 15th signal, said 15th signal comprising the output of said third logic means,
said fourth logic means comprising:
means to combine said operation instruction signal with said 15th signal in AND gate fashion to form a 16th signal,
means to combine said fifth signal with the output of said inverter in AND gate fashion to form a 17th signal,
means to add said 16th and 17th signals to form an 18th signal,
means to invert said 18th signal to form a 19th signal,
said 19th signal comprising the output of said fourth logic means.

3,878,987

RAILWAY TRACK STRUCTURE

Hankichi Uzuka, Tokyo, Japan, assignor to Japanese National Railways, Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,357
Claims priority, application Japan, Feb. 10, 1972, 47-13980
Int. Cl. E01b *1/00*
U.S. Cl. 238—2 **17 Claims**

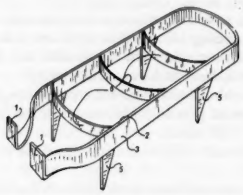


1. A railway track structure comprising a bottom ballast having a relatively flat upper surface, at least one large panel sleeper disposed over said bottom ballast; top ballast disposed around said large panel sleeper; a quick-hardening material injected between the base of said large panel sleeper and the adjacent upper surface of said bottom ballast and a waterproof layer of a quick-hardening waterproofing material provided on the upper surface of said top ballast.

3,878,988
TRACTION AID FOR VEHICLES

Aime Blais, 1111 Fabre St., Sherbrooke, Quebec, Canada

Filed Nov. 13, 1973, Ser. No. 415,310
Int. Cl. E01b *23/00*
U.S. Cl. 238—14 2 Claims

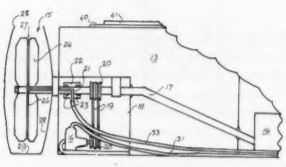


1. A traction aid for vehicles comprising a U-shaped frame formed of a strip of metal lying transversely of the plane of the U-shape frame and defining longitudinally extending bars with free end portions inwardly bent of the frame and each terminated by a claw defined by a plate portion extending transversely of the U-shape frame and in a plane perpendicular to the plane of said frame, said bars being twisted through about 90° adjacent said plate portions and the twisted portions converging toward each other in the direction of said plate portion, each said claw having a top free edge and an outer lateral edge, the top free edges of the claws being transversely aligned relative to the frame and spaced from each other, the outer lateral edges of said claws being spaced apart a distance less than the distance between said longitudinal bars, and adapted to operatively grip the peripheral surface of the tread of a tire, said claws being integrally formed and rigid with said frame, separate transverse braces formed of a strip of metal lying transversely of the plane of the U-shape frame and traction cleats fixed to said longitudinal bars of said frame and extending outwardly away therefrom in a direction opposite to said top free edges of said claws.

3,878,989
SPRAY APPARATUS

Thomas White Jenkins, Premaydena 7181, Tasmania, Australia

Filed Dec. 6, 1973, Ser. No. 422,367
Claims priority, application Australia, Dec. 6, 1972, 1514/72
Int. Cl. A01m *17/08*
U.S. Cl. 239—77 7 Claims

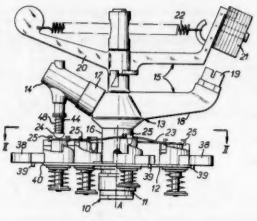


1. Spray apparatus adapted to be drawn by a tractor and including a fan having its blades mounted for rotation in a vertical plane, each said blade having an open-ended radial passage extending from a central passage adapted to be supplied with spray fluid to adjacent the tip of said blade so that as the blades rotate, spray fluid may be centrifuged outwardly to the open end of the blade passage, and a pair of substantially vertical annular plates located on either side of the fan and extending beyond the tips of the blades to induce an air draft between each plate and the fan blades whereby the spray emitted from the tips of the blades is atomized by the air draft and discharged as a fine mist or fog.

3,878,990
WATERING DEVICES

Pierre Daniel Geraudie, Paris, France, assignor to Hozelock Limited, Haddenham, Aylesbury, Buckinghamshire, England

Filed Jan. 23, 1974, Ser. No. 435,893
Int. Cl. B05b *3/08*
U.S. Cl. 239—236 11 Claims

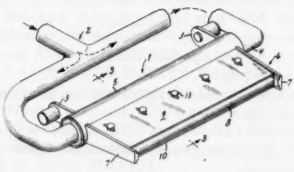


1. A watering device comprising a fixed base, a moving system rotatably mounted about a vertical axis on the said base and having at least one watering nozzle, a hydraulic motor for driving the said moving system in rotation, means for supplying water to the said nozzle and to the said hydraulic motor, a cam carried by the said fixed base and forming a circular track coaxial with the axis of rotation of the said moving system, said cam being mounted on a plurality of studs which are adjustable both in position and in height and which can be operated from the exterior, and a cam follower carried by the moving system and co-operating with the said cam, the said follower acting on the nozzle so as to modify the range of the jet as a function of the profile of the said cam, the device being characterised in that the said cam is deformable and in that regulating means accessible from the exterior are provided in order to adjust the profile of the said cam.

3,878,991
STEAM NOZZLE

Joseph L. Sabadics, Nutley, and John F. Ewald, New Milford, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 14, 1974, Ser. No. 442,540
Int. Cl. A23f *1/08*; B05b *7/14*
U.S. Cl. 239—456 6 Claims



1. An elongated steam nozzle for agglomerating soluble powder comprising in combination;

a. a header conduit through which steam exits into a nozzle nose section, said header provided with spaced-apart holes which extend across the length of the nozzle, said holes providing more open area per unit of length at the

two outer extremities of the nozzle than at the center portion, and

b. a fixed foil member within the nozzle nose section, extending the entire length of the nozzle, and which forms two divergent steam channels between the faces of the foil and upper and lower nozzle plates, said channels diverging in the direction of steam flow and permitting gentle steam expansion within the nozzle immediately prior to discharge, and said channels being in direct communication with the holes in the header conduit.

3,878,992

DECORATING HEAD

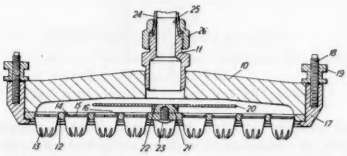
John MacManus, 143-16 - Twenty-second Rd., Whitestone, N.Y. 11357

Filed Apr. 11, 1973, Ser. No. 349,991

Claims priority, application United Kingdom, Apr. 14, 1972, 17370/72

Int. Cl. A23g *3/28*

U.S. Cl. 239—553 **23 Claims**



21. A hollow decorating head for use in depositing a stiff fluent aerated food product onto units of confectionery, comprising: wall means defining top, bottom and peripheral side walls: the wall means having an inlet through which the aerated food product is supplied into the head under pressure; an array of outlet nozzles at substantially atmospheric pressure in the bottom wall; the entrance to each nozzle being a thin plate orifice through which the product passes into the nozzle and providing an appreciable pressure differential between the pressurized interior of the head and the interior of the nozzle; each orifice having an area not greater than 25% of the effective cross-sectional area of the downstream end of the corresponding nozzle; the thin plate orifice and the nozzle being constructed and arranged to provide flow through each orifice equivalent to ideal flow;

and a deflector between the top and bottom walls and mounted below the inlet and in the path of the product entering the head through the inlet; the deflector having a peripheral edge positioned inwardly from the peripheral side wall so that a first position of the product is caused to flow outwardly over the deflector and then downwardly to the nozzles in the bottom wall through the gap between the peripheral edge of the deflector and the peripheral side wall of the head; the deflector having an opening in a central portion thereof allowing another portion of the product to flow through the deflector.

3,878,993

METHOD FOR PRODUCING ALUMINUM PELLETS

Matthias Welsch, Dammstrasse, 415 Krefeld-Uerdingen, Germany

Continuation of Ser. No. 209,391, Dec. 17, 1971, abandoned. This application Oct. 29, 1973, Ser. No. 410,634

Claims priority, application Germany, Dec. 21, 1970, 2062821

Int. Cl. B02c *13/08, 13/13, 19/00*

U.S. Cl. 241—3 **6 Claims**

1. An improved batch process for transforming aluminum chips into aluminum pellets of a desired minimum and maximum size comprising the steps of:

introducing aluminum chips of a preselected size into a perforated drum of a hammer mill;

actuating the hammer mill and thereby beating the aluminum chips together and compacting said chips in the hammer mill for a dwell time sufficient to transform such chips into irregular-shaped, rough-surfaced pellets as a main product, said pellets having a diameter in the range from 1–10 millimeters, the maximum diameter being determined by the size of the aluminum chip and the dwell time and the minimum diameter being determined by the size of the perforations in said drum;

continuously discharging any resulting finely divided aluminum powder and pellets having a diameter less than that desired from the drum as a by-product; and

removing the formed pellets from said drum at the end of such dwell time.

3,878,994

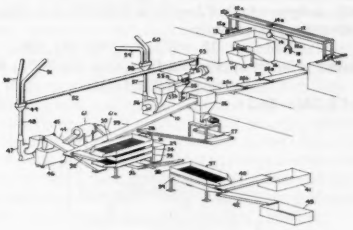
APPARATUS AND PROCESS FOR TREATING WASTE WOOD

Liong-Hian Tee, Madison, Wis., assignor to Urban Wood & Fiber Products, Inc., Madison, Wis.

Filed Nov. 28, 1973, Ser. No. 419,605

Int. Cl. B02c *21/00*

U.S. Cl. 241—24 **14 Claims**



1. A process for treating waste wood to produce usable wood chips, comprising the steps of;

a. grinding said waste wood to produce wood chips:

b. magnetically separating said wood chips from magnetic material intermixed therewith;

c. separating said wood chips by selectable sizes into oversize chips, acceptable chips and fines;

d. compacting said acceptable chips;

e. releasing said compacted acceptable chips in a water spray during expansion of said chips to thereby facilitate absorption of moisture into said chips; and

f. washing said acceptable chips in a water bath.

3,878,995

REFUSE SHREDDER AND CLASSIFIER

James C. Nash, Sulphur Springs, Tex., assignor to Langhorn Construction Company, Inc., Sulphur Springs, Tex.

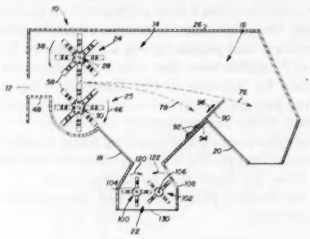
Filed Sept. 4, 1973, Ser. No. 393,943

Int. Cl. B02c *13/04;* **B07b** *13/10*

U.S. Cl. 241—79.1 **9 Claims**

1. Apparatus for shredding material including material particles of differing shapes, sizes and densities and for classifying shredded particles into particle groups of differing densities and shapes comprising: a housing defining a shredding chamber, a pair of vertically spaced shredder cylinders mounted for discharging shredded particles in a generally horizontal direction into the chamber, at least two bin means for receiving shredded particles, the bin means being spaced in the direction of discharge of the shredded particles from the cylinders, baffle means disposed between the bin means and projecting upwardly so as to interrupt the ballistic flight of particles with a greater density for guiding such greater den-

sity particles into means positioned proximate the cylinders, and means permitting movement of the baffle means in a



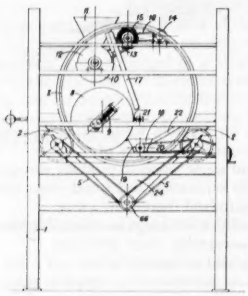
generally vertical direction so as to allow a variation in the density of particles collected in the proximate bin means without changing the relative position of the bin means.

3,878,996

SHREDDING MACHINE FOR TOMATO PULP INTENDED FOR CANNING IN THE RAW STATE

Gianfranco Dall'Argine, and Ermes Ghiretti, both of Parma, Italy, assignors to Dall'Argine & Ghiretti s.n.c., Stradella De Collecchio, Parma, Italy

Filed Sept. 28, 1973, Ser. No. 401,576
Claims priority, application Italy, Oct. 24, 1972, 46929/72
Int. Cl. B02c *17/10*
U.S. Cl. 241—84.2 **6 Claims**



1. A machine for reducing tomatoes and parts thereof into small pieces, said machine comprising:

a hollow cylinder defining in its cylindrical surface a plurality of holes encircled by cutting edges,

a plurality of guide and support rollers mounted to externally support and drive said cylinder,

a pressure roller of smaller diameter than said cylinder and mounted within said cylinder to rotate about an axis parallel to that of said cylinder,

means resiliently urging said pressure roller against the inner surface of said hollow cylinder,

means for feeding said tomatoes and parts thereof into said hollow cylinder above the area of contact between said pressure roller and cylinder, so that said pressure roller forces the pulp of said tomatoes out of said cylinder through said holes, while any skin associated therewith is retained within said cylinder,

means for collecting the pulp forced to the outside of said cylinder, and

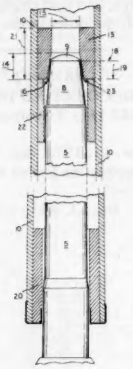
means for removing said skin from the inside of said cylinder.

3,878,997

DOFFABLE BOBBIN ASSEMBLIES

Samuel F. Adams, Greenville, and Robert J. Guerin, Providence, both of R.I., assignors to American Paper Tube Company, Woonsocket, R.I.

Filed Apr. 11, 1974, Ser. No. 460,065
Int. Cl. B65h *54/54*
U.S. Cl. 242—46.21 **8 Claims**



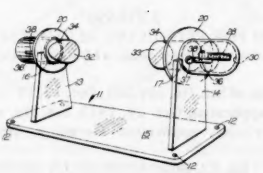
1. A readily doffable high-speed bobbin structure for mounting in combination with an elongated rotatable upright spindle having a frusto-conical external seat tapering toward an upper end thereof, comprising an elongated tubular bobbin proportioned to be donned in mated relationship about the spindle, said bobbin having an internal seat near an upper end thereof which is frusto conical and tapered toward said upper end, the taper of said bobbin seat extending above and below a position at which the diameter of said internal seat substantially matches a diameter of the external spindle seat near the upper end of the spindle, said taper of said internal bobbin seat being substantially one-third greater than that of the external spindle seat, the surfaces of said bobbin seat above said position having slope sufficiently different from slopes of the spindle surfaces above said position to avoid contact with said spindle surfaces under all conditions of permissible displacements between said bobbin and spindle, and the axial length of said tapered bobbin seat below said position being relatively short and smaller than the diameter of said spindle seat at said position, whereby said bobbin may be donned and doffed readily and the bobbin may be driven efficiently at high speeds by the spindle without undue raising, lowering or vibration.

3,878,998

ROLL HOLDER

Gilbert A. Lazzari, 340 Arlington Rd., Redwood City, Calif. 94062

Filed Dec. 3, 1973, Ser. No. 420,847
Int. Cl. A47k *10/16*
U.S. Cl. 242—55.2 **1 Claim**



1. A roll holder upon and from which a roll can be mounted and removed with a single hand movement; said holder com-

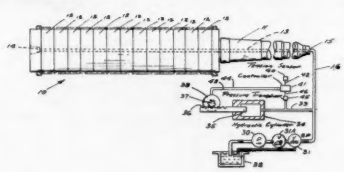
prising a base, a pair of spaced apart standards fixedly secured to said base and extending normal thereto, a hollow housing on each of said standards arranged in spaced relationship at the same level with respect to one another; each of said housings opening toward one another, a pair of linearly movable plungers mounted in said hollow-housings; each of said pair of plungers having a cavity in its inner end and having a long side and a shorter opposite side, a bevelled outer end on each of said plungers joining said long side and said shorter side to which pressure may be applied to move said plungers into said hollow housings, and a spring confined between the inner end of each of said housings and the bottom of each of said cavities in said plungers urging said plungers outwardly for supporting the core of a roll on the long side of each of said plungers; pressure applied to said bevelled ends of said plungers forcing them into said housings when mounting a roll thereon and when removing a roll therefrom; each of said housings having an elongated slot therein a hole in the shorter side of each of said plungers extending interiorly thereof and in communication with said slots in said housings, and a pin extending through each of said slots into each of said holes to limit the linear movement of each of said plungers and to prevent rotation thereof.

3,878,999

STRIP WINDING APPARATUS

Howard W. Daves, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 18, 1972, Ser. No. 281,965
Int. Cl. B65h *19/04*
U.S. Cl. 242—56.9 **3 Claims**



1. Strip winding apparatus for winding simultaneously and under equal tension individually a plurality of strips of material on individual cores comprising in combination

a rotatable mandrel body having a plurality of sections each having a core-supporting member movable radially relative to the axis of rotation of said body and resiliently biased inwardly toward said axis,

pressure-actuated means operatively connected to each of said members and individually moving said core-supporting members under the influence of a pressurized fluid,

a core member supported by and releasably frictionally engaged in driven relationship by one of said core-supporting members for winding a strip of material onto said core member,

another core member supported by and releasably frictionally engaged in driven relationship by another of said core-supporting members for winding another strip of material onto said another core member,

a passageway within said body connected to each of said pressure-actuated means in fluid communication relationship,

means including a conduit supplying pressurized fluid at a preselected pressure during operation of the apparatus connected to said passageway,

means sensing and comparing tension of said strips of material and producing a signal when the tension of the individual strips is unequal, and

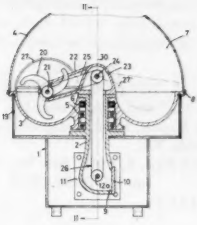
pressure influencing means connected to said signal producing means and to said supply means and effecting a pressure change from said preselected pressure and allowing one of said core members to slip individually relative to said body until the tension of both strips of material becomes equalized.

3,879,000

VACUUM CUTTING MEAT PROCESSING MACHINE

Hellmut Muller, 7969 Hohentengen In der Haue 6, and Herbert Muller, 7947 Mengen am Holderstock 40, both of Germany

Filed Nov. 27, 1973, Ser. No. 419,419
Claims priority, application Germany, Sept. 22, 1973, 2347853; Dec. 2, 1972, 2259126
Int. Cl. B02c *18/12, 18/18*
U.S. Cl. 241—282.1 **15 Claims**



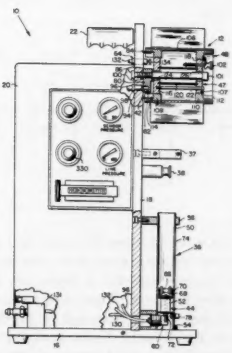
1. A vacuum meat processing machine comprising in combination, an annular bowl having an axis of rotation and being rotationally symmetric and rotationally arranged about said axis of rotation, a rotating work processing tool reaching into said bowl; a cutting shaft supporting said work processing tool; a cutting shaft carrier for holding said cutting shaft with said work processing tool, said cutting shaft and said work processing tool comprising cutting means; a hood covering said bowl and said cutting shaft carrier; a vacuum chamber covered and bordered by said hood; a bearing block arranged in the center of said annular bowl, the cutting shaft carrier with said cutting shaft and said processing tool being arranged on said bearing block and being completely in said vacuum chamber.

3,879,001

TAPE WRAPPING METHOD, APPARATUS, AND ARTICLE

John R. Schovee, Pittsford, N.Y., assignor to Garlock Inc., Palmyra, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,524
Int. Cl. B65h *17/02*
U.S. Cl. 242—68.1 **15 Claims**



1. An article comprising:

a core adapted to be wound with a length of wrapping tape

and adapted to rotatably release said tape, said core including:

i. a substantially cylindrical outside diameter surface upon which said wrapping tape can be wound; and

ii. said core being at least partially hollow and having a chamber therein, and said core including means for mounting said core on a spindle and drive means connected to said core and located in said chamber for use in rotating said core, said drive means being separate from said mounting means and being located so as to be out of contact with a spindle when mounted thereon and for responding to a driving force separate from said spindle.

3,879,002

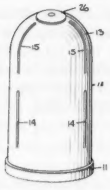
THREAD CANISTER

Philippe Hard-The McClain, Columbia, S.C., and Carl J. Velte, Grand Rapids, Mich., assignors to Shakespeare Company, Columbia, S.C.

Filed Sept. 6, 1973, Ser. No. 394,752

Int. Cl. B65h *49/18*

U.S. Cl. 242—137.1 **20 Claims**



1. A thread canister having a dome, a cage located within said dome for receiving a thread brake, and a plurality of ribs extending from said cage downwardly within said dome in integral relation with said cage and said dome for strengthening of said dome.

3,879,003

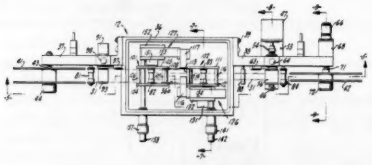
FILM TRANSPORT SYSTEM

John Anton Gasser, 1386-19th Ave., San Francisco, Calif. 94122

Filed May 16, 1973, Ser. No. 360,633

Int. Cl. B65h *59/38;* **G03b** *1/04;* **G11b** *1/52*

U.S. Cl. 242—188 **13 Claims**



9. In a film transport system for moving a strip of film between supply and take-up reels and stopping the film in a predetermined position so that a frame on the film can be projected, the film having a plurality of longitudinally spaced frames and indexing marks disposed at predetermined locations relative to the frames: framework means, supply and take-up reels mounted on the framework means, drive means including an electrically energized stepping motor for moving the film from the supply reel toward the take-up reel in discrete steps substantially shorter than the frames on the film, said drive means also including a drive capstan driven by the stepping motor and a pinch roller for engaging the film and urging it against the drive capstan, slip clutch means for engaging the film between the supply reel and the drive capstan for yieldably resisting the movement of the film toward the take-up reel to tension the film and hold it taut, sensing means for detecting the indexing marks when the frames are in a predetermined position between the supply and take-up reels, and control means responsive to the sensing means for deenergizing the stepping motor to stop the movement of the film when one of the frames is in the predetermined position.

3,879,004

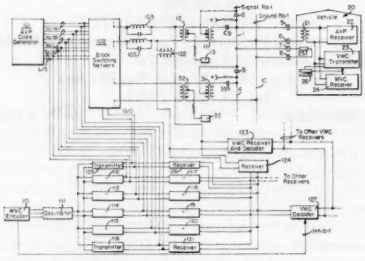
VEHICLE DETECTION, SIGNALING AND COMMUNICATION SYSTEM

Charles Andreasen, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,414

Int. Cl. B61l *21/06*

U.S. Cl. 246—62 **13 Claims**



1. A vehicle detection and communication system comprising,

a sectionalized conductor provided with energy of one type and detecting means connected to each section of said sectionalized conductor and responsive only to energy of said one type,

first means for transmitting control signals to each section of said sectionalized conductor distinctive of traffic conditions in advance of said section,

second means for transmitting communication signals to each section of said sectionalized conductor, and first vehicle carried means conductively engaging said sectionalized conductor for providing a low impedance path to ground for said energy of one type and for carrying said control and communication signals between said sectionalized conductor and said vehicle.

3,879,005

DOUBLE SUCTION CUP VACUUM HOLDER

Joseph J. Flick, Amarillo, Tex., assignor to Oliver W. Bivins, Amarillo, Tex., a part interest

Division of Ser. No. 300,383, Oct. 24, 1972. This application Apr. 17, 1974, Ser. No. 461,619

Int. Cl. F16b *47/00*

U.S. Cl. 248—206 R **6 Claims**

1. In a vacuum holder having

a. an arcuate suction cup with a spherical concavity, a flexible circular lip peripherally surrounding the concavity, and

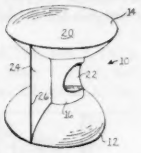
b. an integral stem, extending from the side of the cup opposite the spherical concavity

c. the stem coaxial with the cup and the spherical cavity

d. attachment means on the stem for attaching items thereto;

e. An IMPROVED VACUUM BREAKER COMPRISING:

f. a web of planar configuration having one edge integral with said stem and extending radially therefrom, another



edge of said web extending from the intersection of said stem and said cup to said lip of said cup and being integral with said cup,

g. the web aligned with the axis of the stem,

h. so that when the web is pushed toward the stem it lifts the lip of the cup thus breakinng the vacuum of the cup.

3,879,006

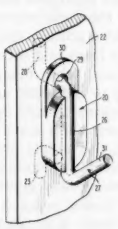
APERTURED PANEL BRACKET

Walter J. Staudte, Jr., 514 S. 15th, Sunnyside, Wash. 98944

Filed Aug. 13, 1973, Ser. No. 387,625

Int. Cl. A47g *23/02*; **F16m** *13/00*

U.S. Cl. 248—223 **2 Claims**



1. A support bracket assembly for use with an apertured panel comprising a support and stabilizing block-like element having a rear relatively wide flat face adapted to abut the front face of an apertured panel, said block-like element being vertically elongated and having a top extension of reduced thickness and said extension having a central aperture adapted to register with a panel aperture, said block-like element having a relatively thick body portion below said extension and said body portion provided in its front face with a central longitudinal groove which extends vertically during use of the assembly, said groove extending through the opposite ends of said body portion with the top of the groove terminating at the lower side of the aperture in said top extension, said groove having a restricted entrance along its entire length at the front face of said body portion, a substantially L-shaped downturned stud fixedly attached to the rear of the block-like element at the lower end thereof and adapted to be supportingly engaged through a panel aperture, and an article hanger formed separately from the block-like element for detachable assembly therewith, said hanger having a straight rod-like body portion arranged vertically during use and adapted to enter said groove through said restricted entrance and to be retained therein, the rod-like body portion of the hanger extending entirely through said groove lengthwise, a substantially L-shaped upturned stud fixedly secured to the top end of the rod-like body portion including a stud part arranged substantially at right angles to the rod-like body portion and a rearward stud part substantially parallel to the rod-like body portion and projecting thereabove, said L-shaped upturned stud adapted to engage removably through the aperture in said extension of said block-like element and through a panel aperture with which the last-named aperture is adapted to register, and a forwardly projecting upturned article support arm for the hanger fixedly attached to the lower end of the rod-like body portion immediately below the lower end of said block-like element.

3,879,007

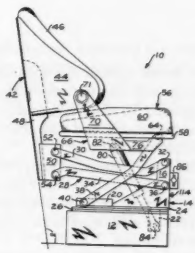
VEHICLE SEAT

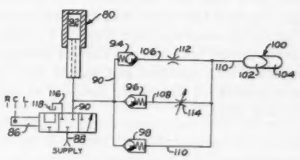
James C. Barton, Peoria; Jon C. Christensen, Washington; James P. Mueller, East Peoria, and Larry W. Sprinkle, Decatur, all of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Division of Ser. No. 241,640, March 6, 1972, Pat. No. 3,788,697. This application Dec. 7, 1973, Ser. No. 422,879

Int. Cl. A47b *95/00*

U.S. Cl. 248—400 **2 Claims**





1. A suspension system for a vehicle seat, comprising

a hydraulic cylinder effectively interconnected with said seat and responsive to vertical motion of the seat, the hydraulic cylinder including a working chamber containing hydraulic fluid and an inlet passage in communication with the working chamber,

an accumulator,

a first check valve means in communication with said cylinder inlet passage and said accumulator to regulate the rate of fluid flow from said cylinder working chamber to said accumulator and provide normal damping, said first check valve means comprising a check valve in series with a manually adjustable orifice,

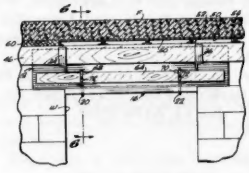
a second check valve means in parallel arrangement with said first check valve means, said second check valve means being biased to open at a higher pressure than said first check valve means to provide an additional path for fluid flow from said cylinder working chamber to said accumulator to provide impact damping, and

a third check valve means in parallel arrangement with said first check valve means to provide for hydraulic fluid flow from said accumulator to said cylinder working chamber, said third check valve means comprising a check valve in series with an orifice.

3,879,008
PERMANENT FORMS SYSTEM

Jose R. Gayoso, 2310 Country Club Prado, Coral Gables, Fla. 33134

Filed Apr. 16, 1973, Ser. No. 351,269
Int. Cl. E04g *11/50*
U.S. Cl. 249—50 6 Claims



1. A permanent forms system for forming the top of an opening in a building wall and the above floor slab whereby concrete may be poured to simultaneously form a concrete beam above the wall opening and the above concrete floor slab, said forms system comprising;

A. first and second form members comprised of sheet metal side plates, each being sized to cover one side of the open area where the beam is to be poured and to overlap the walls on both ends of said beam area, said first and second form members including,

1. means to support floor form means for the above floor slab,

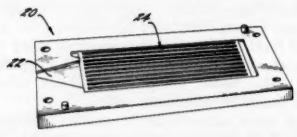
2. means to strap said side plates together through the beam area with the respective end portions thereof beaing against the walls in said overlap areas,

B. an inverted channel member, fixed as by bolts relative to outwardly turned bottom edge flanges on said side plates to cooperate with said first and second form members to define a pocket for the beam, opening at the top to the above floor level.

3,879,009
MOLD FOR MAKING OBJECTS

George W. Mao, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Division of Ser. No. 175,122, Aug. 26, 1971, Pat. No. 3,779,816. This application May 16, 1973, Ser. No. 360,915
Int. Cl. B22c *1/00*
U.S. Cl. 249—135 4 Claims

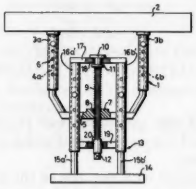


1. A mold for forming objects from a fluid which comprises a cavity in the shape of the object to be formed having at least a surface facing of titanium and an integral adherent oxide layer thereon of a thickness sufficient to satisfy the heat insulating requirements for the objects being formed.

3,879,010
SUPPORT STRUCTURE FOR USE IN CASTING REINFORCED CONCRETE CEILINGS AND THE LIKE

Ake W. Norlander, Ravkallsvagen 4, 18275 Stocksund, Sweden

Filed Apr. 26, 1973, Ser. No. 354,667
Claims priority, application Sweden, May 5, 1972, 5906/72
Int. Cl. E04g *11/54*
U.S. Cl. 249—210 8 Claims

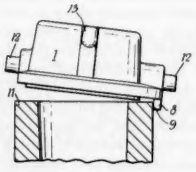


1. A support framework, preferably intended to form part of a casting board for casting concrete building elements such as ceilings, comprising an upper and a lower frame, said frames being vertically adjustable relative to each other, said upper frame having a middle portion and telescopic tubes extending upwardly from said middle portion, the free ends of said tubes being spaced apart and being intended to support directly or indirectly the form members, said lower frame having a similar middle portion and two telescopic tubes extending downwardly from said second middle portion, the free ends of said second tubes being spaced apart and intended to rest directly or indirectly against a supporting surface, said middle portions of said upper and lower frames being connected by means of a screw enabling said frames to be vertically adjusted, the middle portion of at least one of said frames being provided with guiding parts located at each side of said screw and forming guides for said tubes of the other frame, and said frames being so located that the middle portion of said lower frame is situated above the middle portion of said upper frame.

3,879,011
HEAD BOXES FOR INGOT MOULDS

Richard Andrew Lacjak, Bedford Heights, and Geoffrey Fenton, Rocky River, both of Ohio, assignors to Foseco International Limited, Birmingham, England

Filed Feb. 9, 1973, Ser. No. 331,097
Claims priority, application United Kingdom, Feb. 17, 1972, 7453/72
Int. Cl. B22d *7/10*; B66c *1/10*
U.S. Cl. 249—202 2 Claims



1. In an ingot mould head box comprising a pair of lifting lugs and a flange depending from the base of the head box adapted to lie with its inner face contiguous with an outer face of an ingot mould body when the head box is correctly posi-

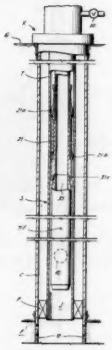
tioned thereon, the improvement wherein the flange and the lifting lugs are so positioned that when the head box is suspended by the lifting lugs, the flange is lowermost and the base of the head box is inclined to the horizontal.

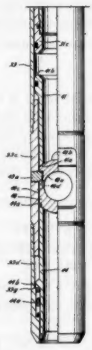
3,879,012

WELL TOOL

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 214,734, Jan. 3, 1972, Pat. No. 3,821,962. This application Mar. 7, 1974, Ser. No. 449,049
Int. Cl. F16k 17/20
U.S. Cl. 251—58 22 Claims





1. A well tool adapted to be positioned in the bore of a production tubing for controlling flow of fluid therethrough in response to pressure changes in the tubing comprising:

a. a flow control assembly secured in the bore of the tubing;

b. bore closure means mounted with said flow control assembly for movement to and from an open position enabling flow of fluid through the bore of the tubing to and from a closed position blocking flow of fluid through the bore of the tubing; and

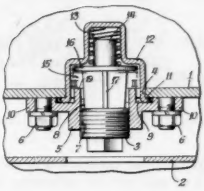
c. means for effecting movement of said bore closure means to the closed position when the pressure in the bore of the tubing is increased above a preselected well pressure wherein flow of fluid through the bore of the tubing is controlled.

3,879,013

CHECK-TYPE DRAIN VALVE

Thomas J. Hajek, Jr., Joliet, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Oct. 27, 1972, Ser. No. 301,464
Int. Cl. F16k 15/18
U.S. Cl. 251—144 3 Claims



1. A combination drain assembly for controlling the flow of fluid from a storage tank comprising; adapter means having passage means therein for communicating fluid from said storage tank to the exterior thereof, check valve means movably mounted within said passage means for selectively opening and closing said passage means to respectively permit and prevent fluid flow from said storage tank to said passage means, biasing means for constantly urging said check valve means toward a passage means closing position, cage means for retaining said biasing means in position, closure plug means selectively insertable in said passage means for closing off said passage and for directly engaging and urging said check valve means toward a position in which it does not block the flow of fluid from said storage tank to said passage means, said cage means including a unitary stepped member having a first portion for engaging said check valve means and having a second portion for engaging said adapter means, said check valve means including a valve body having a stem portion and a fluted portion, said portions being interconnected by an enlarged seating portion, said enlarged seating portion comprising an annular flange disc having first and second substantially flat surfaces thereupon and wherein said first surface is adapted to coact with said stepped member to limit movement of said valve body in a first predetermined direction and wherein said second surface is adapted to sealingly engage said adapter means to close off said passage means upon removal of said closure plug means from said passage means.

3,879,014

VEHICLE LEVELING DEVICE

William A. Larson, 1215 Paseo Dorado, Fullerton, Calif. 92635

Filed July 13, 1973, Ser. No. 379,188
Int. Cl. B66f 7/22
U.S. Cl. 254—94 2 Claims

1. A leveling device for raising a wheel of a vehicle to effect leveling of the vehicle comprising:

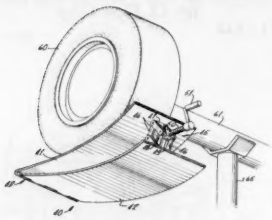
a generally wedge-shaped body having a narrow end and a wide end and curved top and bottom surfaces, said top and bottom surfaces being curved in the same direction and having approximately equal radii of curvature, said body comprising:

a pair of curved plates forming said top and bottom surfaces, respectively; and

hinge means for interconnecting first ends of said plates for relative pivotal movement; and

a jack mechanism interconnecting the other ends of said plates for adjusting the spacing therebetween, said jack mechanism comprising:

at least one set of four, pivotably interconnected arms arranged in a generally rectangular configuration, opposite corners of said set being connected to respective ones of said other ends of said plates; and



a crank mechanism connected to the remaining opposite corners of said set for adjusting the spacing therebetween.

3,879,015

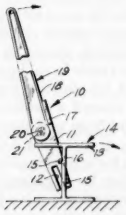
STRUCTURAL STEEL HANDLING DEVICE

Donald Krantz, 1561 Shirley Dr., Pleasant Hill, Calif. 94523

Filed Mar. 6, 1974, Ser. No. 448,477

Int. Cl. B66f *15/00*

U.S. Cl. 254—131 **1 Claim**



1. A structural steel handling device, comprising in combination, an elongated plate forming a jaw member, said jaw member having a slot in one end thereof extending from an end edge for receiving a flange of a structural beam, a pair of spaced apart pins located along one logitudinal side edge of said jaw, said pins projected transversely through said plate and extending a substantial distance from both sides of said jaw plate, an elongated handle attached to said jaw member wherein said elongated handle is pivotally attached at one end to a longitudinally intermediate portion of said jaw member by means of a transverse bolt, one end of said jaw member having a lip turned at right angle to a flat plane of a remainder of said jaw member, said lip being aligned with an edge of said handle for abutment therewith, said handle and said jaw member are in a common relatively straight line when said handle is in abutting relationship to said lip.

3,879,016

SAFETY DEVICE

Kauko Kankkunen, Lake Worth, Fla., assignor to Sisarakenneteollisuus Oy Sirate AB, Helsinki, Finland

Filed Sept. 7, 1973, Ser. No. 395,287

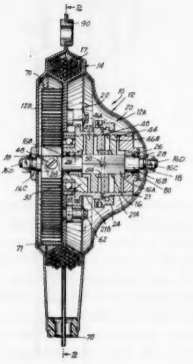
Int. Cl. A62b *1/12*

U.S. Cl. 254—158 **13 Claims**

1. The combination comprising:

1. a hollow cylinder containing fluid, said cylinder having end walls with undulating surfaces defined by alternating high and low points;

2. a disk located midway longitudinally within the chamber defined by said hollow cylinder, said disk serving as a partition to divide said chamber into two portions, a piston means comprising at least two axially movable pistons disposed respectively in said two chamber portions, each of said axially movable pistons having undulating end faces defined by alternating high and low points and each piston being reciprocally movable along the shaft axis responsive to alternate driving engagement with complementarily undulating surfaces at a respective disk face and at a respective opposing surface at one of the end walls of said cylinder;



3. means for producing relative rotational movement between said piston means and said cylinder such that alternate driving engagement is established between the end faces on said piston means and on said respective end walls;

4. a shaft;

5. a housing in which said shaft is held against rotation;

6. a drum revolvable about said shaft;

7. a hydraulic braking device, formed by the aforesaid hollow cylinder, said device being selectively connectable to said drum so as to revolve therewith.

3,879,017

BALCONY RAILING ASSEMBLIES OF EXTRUDED METAL

Frederic R. Maxcy, Ellicott City, and Richard A. Hubbard, Severna Park, both of Md., assignors to W-T Industries, Inc., Baltimore, Md.

Filed June 19, 1973, Ser. No. 371,384

Int. Cl. E04h *17/14*

U.S. Cl. 256—65 **15 Claims**

1. A metallic railing assembly comprising

a. a vertical post of extruded metal having a longitudinal vertical slot extending along the central portion of at least one face thereof,

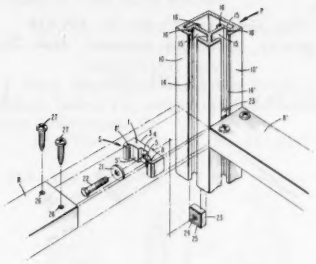
b. a horizontal rail having one end thereof connected to said post at said face,

c. a discrete segment severed from a continuous extrusion having a pair of continuous screw bosses projecting symmetrically with respect to the longitudinal axis of the extrusion from one face thereof, for interconnecting said post and rail,

d. said screw bosses adapted to receive self-engaging screw fasteners adapted to extend through openings in said end of said rail which is in overlying engagement with the

upper severance plane of said segment, and

e. means for securing said segment at a predetermined level



of said vertical post to adjust the plane of attachment of said horizontal rail to said post.

3,879,018

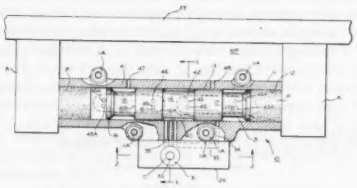
VIBRATORS

William Allan Hunter, 2222 Hammond Dr., Inverness Countryside, Ill. 60172

Filed Mar. 21, 1974, Ser. No. 453,329

Int. Cl. B06b *1/18*

U.S. Cl. 259—1 **9 Claims**



4. A vibrator comprising:

a. a body member having its ends constrained between elements of an article to be vibrated;

b. a bore in said body member and a spool member disposed in said bore and slidable therein;

c. a plug formed of impact resistant material at each end of said bore and adapted to transmit impulses into said article upon excursions to and fro of said spool member;

d. said spool member having:

i. alternating grooves and lands comprising a central groove and lands flanking said central groove and closely fitting in said bore;

ii. a groove flanking each of said lands, each of said grooves being flanked by a land of lesser diameter than said bore and adapted to contact a correlative one of said plugs;

e. structure for applying a pressurized gas to said body member to cause said spool member to have to and fro excursion in said bore to contact said plugs comprising;

f. a manifold connected to a source of pressurized gas and having a passageway to said central groove of said spool member;

g. an exhaust port in said body member disposed at each side of said passageway and lapped and unlapped in accordance with the excursion of said spool member by the correlative land flanking said central groove;

h. means for causing said spool member to commence excursion when stalled in a position where both of said exhaust ports are lapped comprising;

i. an auxiliary passageway in said manifold including a valve therein normally biased to closed position during normal excursion of said spool member;

ii. said passageway being connected to said bore one of said grooves flanking said central groove;

iii. said valve being biased to an open position and to a position to close the supply of pressure fluid to said central groove and create a force on said spool to restart said spool for its regular excursion.

3,879,019

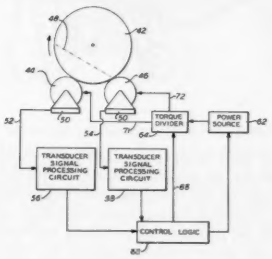
APPARATUS FOR ROTATABLY DRIVING LARGE CYLINDRICAL BODIES

Louis Clarke Fulkerson, Arcade, N.Y., assignor to Airco, Inc., Montvale, N.J.

Filed Mar. 1, 1973, Ser. No. 337,268

Int. Cl. B01f *9/02*

U.S. Cl. 259—89 **14 Claims**



1. Apparatus for effecting rotational drive of a large circular body carrying a semi-fluid load therein, which load upon rotation of said body about its principal axis becomes eccentric with respect to the vertical, comprising in combination:

means for supporting said body, said means including at least a pair of first and second rollers, spaced from one another with the rotational axes of said rollers being substantially parallel to but respectively offset to opposite sides of the said axis of said body, said first and second rollers being adapted to frictionally engage said body at points spaced about the circumference of said body, said points being at respectively the upwardly advancing and downwardly advancing side of body when said body is rotated; first and second torque means to provide driving torque to said first and second rollers respectively, to unidirectionally rotate said rollers thereby causing a corresponding unidirectional rotation of said body; and said first torque means being adapted to provide driving torque at said first roller which at all times while said semi-fluid load is eccentric substantially exceeds the torque provided at said second roller; power means for energizing said torque means; and differential means connecting said power means to said torque means, whereby said first and second torque means may rotate at different speeds.

3,879,020

PORTABLE SELF-PROPELLED CONCRETE MIXER

Sam Francis Ray, Madoc, Ontario, Canada, assignor to Secor Equipment Corporation, West Hartford, Conn.

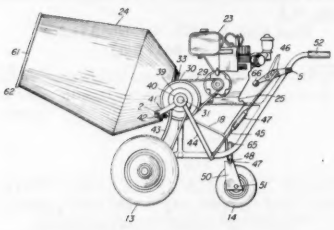
Filed Dec. 4, 1972, Ser. No. 311,624

Int. Cl. B28c *5/22*

U.S. Cl. 259—177 R **3 Claims**

1. A portable self-propelled hand guided concrete mixer vehicle comprising a frame assembly having parallel frame members including hand level grasping means at one of the respective ends of the frame members for guiding movement of the mixer, the frame members depending downwardly from

the grasping means toward a lower respective end of the frame members, cross members including platform means between the frame members, an axle journalled through the lower ends of the frame members, forward ground engaging wheels attached to the axle, a rearward ground engaging wheel pivotally affixed to the frame assembly, a mixing barrel rotatably supported on the frame assembly, said mixing barrel extending forwardly beyond the forward ground engaging wheels and the periphery of the frame assembly at the lower end of the frame members and having an open end for permitting access interiorally within the barrel, an integral drive shaft projecting rearwardly from an opposed closed end of the barrel, said



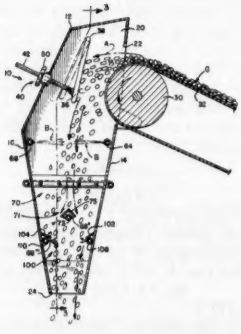
barrel drive shaft being journalled for rotation within said platform means, an engine mounted on the platform means and positioned on the frame assembly rearwardly of the mixing barrel, counterbalancing means including a counterweight integral with the platform for providing additional weight and stability to the mixer vehicle whereby the barrel can be optionally tilted forwardly by lifting the hand level grasping means to pivot the mixer about the axle and pour the contents from the mixing barrel, and further including drive means for transmitting power from said engine to rotate the barrel shaft and power take-off means for selectively transmitting power to said forward ground engaging wheels to thereby propel the mixer vehicle.

3,879,021

GRAVITY FLOW WETTING AND MIXING DEVICE AND MIXING EXTENSION THEREFOR

Francis Gerald Riley, P.O. Box 748, 2355 Glendale Rd., Reno, Nev. 89504

Filed Mar. 29, 1973, Ser. No. 346,099
Int. Cl. B01f *5/20, 5/24*
U.S. Cl. 259—180 **5 Claims**



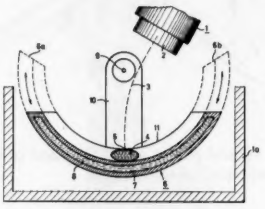
4. The invention defined in claim **1** wherein there are three of said superposed vertically stacked material mixing, wetting and turning members.

3,879,022

METHOD AND APPARATUS FOR MELTING, PURIFYING AND ALLOYING METALS

Hans Aichert, Westbahnhofstrasse 15, 6450 Hanau am Main, Germany

Filed June 13, 1973, Ser. No. 369,434
Claims priority, application Germany, June 20, 1972, 2331770
Int. Cl. C21c *7/10*
U.S. Cl. 266—34 V **3 Claims**



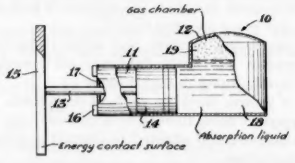
1. An arrangement for processing metallic materials under vacuum, comprising, in combination, a movable support; a metallic substance on said support; means for applying heat to said metallic substance on said support for maintaining said metallic substance in molten state, said metallic substance assuming a shape determined by the surface tension characteristics of said metallic substance; means for rotatably suspending said support about a predetermined pivot axis, said support being a segment of a circular-shaped groove and having a rolling surface along which said metallic substance rolls in molten state relative to said support upon displacing said support with periodic oscillating motions around the pivot axis of said support, the plane through the circular-shaped section of said support being vertical, said pivot axis coinciding with the center point of said rolling surface.

3,879,023

METHOD FOR ABSORBING AND RELEASING ENERGY

Roscoe L. Pearce, Midland, and David F. Wisniewski, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 13, 1973, Ser. No. 424,265
Int. Cl. F16f *5/00*
U.S. Cl. 267—64 R **8 Claims**



1. In a method for absorbing and releasing energy, the steps which comprise:

storing in a closed container a substance which is a liquid phase at atmospheric pressure and at a temperature of from about −50° to 150°F;

storing in the same closed container a substance which is a gas phase at atmospheric pressure and at the recited temperature range, which is chemically inert to the liquid phase, and which is essentially insoluble in the liquid phase at atmospheric pressure;

applying to the liquid-gas phase a positive pressure which is above one atmosphere of pressure, at the recited temper-

ature range, to partially dissolve the gas phase in the liquid phase; and

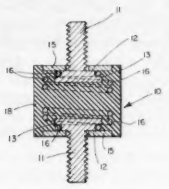
reducing the pressure on the liquid-gas phase to a condition of atmospheric pressure, to permit the partially dissolved gas phase to come out of solution.

3,879,024

MOUNTING DEVICE

Walter T. Scott, Huntingdon Valley, and Frank J. Williams, Cheltenham, both of Pa., assignors to Apex Molded Products Company, Philadelphia, Pa.

Filed Nov. 1, 1973, Ser. No. 411,958
Int. Cl. F16f 7/12
U.S. Cl. 267—136 **10 Claims**



1. A mounting device comprising:

a resilient rubber member;

at least one attachment means bonded to the resilient rubber member; and

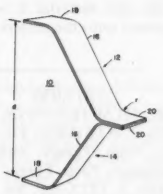
coiled wire bonded to the resilient rubber member; wherein each attachment means has at least one flange arranged with respect to one end of the coiled wire such that the coiled wire exerts force against the flange when the mounting device is subjected to tension loading.

3,879,025

FLAT ELEMENT SPRING

Paul A. Dillard, Littleton, Colo., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 6, 1973, Ser. No. 413,420
Int. Cl. F16f 1/18
U.S. Cl. 267—165 **4 Claims**



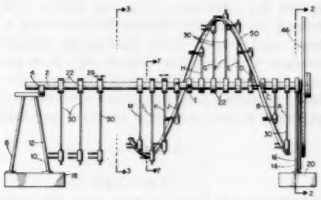
1. A spring comprising a plurality of spring elements, each element including a pair of leaves having corresponding ends secured together, each leaf having an intermediate portion and a free end, said intermediate portions disposed in angular relation with respect to one another and extending in the same direction away from the secured ends, said free ends disposed in substantially parallel relation for spring action therebetween, a first pair of said plurality of spring elements disposed in stacked relation, a first free end of the first of said first pair of spring elements secured to a first free end of the second of said first pair of spring elements, the second free ends of each said spring element disposed for spring action therebetween; and a second pair of spring elements disposed in stacked relation, the free ends of the first of said second pair of spring elements secured to the free ends of the second of said second pair of spring elements.

3,879,026

UNIVERSAL WORK HOLDERS FOR ASSEMBLING CURVED LAMINATED UNITS

James B. Lappin, Jr., Village Cove Inn, Kennebunkport, Maine 04046

Filed Jan. 22, 1973, Ser. No. 325,309
Int. Cl. B27h 1/00; B25b 11/02; E04f 11/18
U.S. Cl. 269—55 **6 Claims**



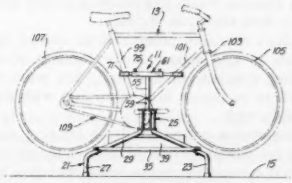
1. A jig for use in the production of an elongated laminated unit shaped in the form of a continuous non-planar curve, said jig comprising a center post, a plurality of arms mounted on said post in selected spaced axial positions and in selected spaced angular positions, each arm being unconnected at its outer end with the next adjacent arm, and lamina receiving guides mounted on said arms in positions defining a non-planar curve, said guides being in the form of radially spaced elements of which at least one of said elements on each said arm is fixed in said curve defining position prior to the insertion of any of the lamina of said elongated unit into said guides, each of said guide elements having a work engaging surface which extends parallel to the axis of said center post and is long enough to extend diagonally across said laminas, the lamina receiving opening between said guide elements terminating at said arm to which the elements are affixed, whereby when a lamina is inserted into said guides, the pitch of the lamina is controlled by its engagement with said arms and the diameter is controlled by its engagement with the said guide elements.

3,879,027

BICYCLE STAND

Meredith T. Thurmond, Jr., 872 W. 6th St., San Pedro, Calif. 90732

Filed Sept. 10, 1973, Ser. No. 395,879
Int. Cl. A47f 7/00
U.S. Cl. 269—157 **7 Claims**



1. A bicycle stand for supporting a bicycle having first and second frame members, said bicycle stand comprising:

a hub;

a plurality of legs, said legs being adapted to engage the supporting surface and to support said hub;

means for mounting said legs on said hub for pivotal movement relative thereto, said legs being pivotable between an extended position in which the legs provide firm support for said hub and a collapsed position in which the overall dimensions of said bicycle stand are less than in said extended position of said legs;

a clamping member including first and second spaced hooks;

means for mounting said clamping member on said hub;

said first and second hooks being adapted to engage the first and second frame members, respectively, and to support the bicycle in a generally upright position; and

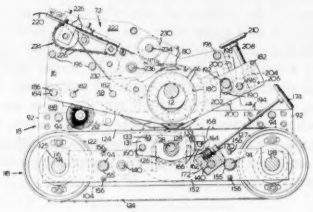
said hub including an upper plate and a lower plate and means for interconnecting said plates, said lower plate having an aperture therein for receiving a first of said legs, said upper plate having an integral projection thereon which projects downwardly from the upper plate, said first leg having an open upper end for at least partially receiving said projection whereby said first leg is pivotally mounted by said aperture and said projection.

3,879,028

PROCESS AND APPARATUS FOR TRANSFERRING SEPARATED MATERIAL

John F. Frank, Ottawa, Ontario, Canada, assignor to R. L. Crain Limited, Ottawa, Ontario, Canada

Filed June 21, 1973, Ser. No. 371,988
Claims priority, application Canada, Apr. 13, 1973, 168734
Int. Cl. B65h *39/00*
U.S. Cl. 270—52 **15 Claims**



1. A transfer mechanism mountable in a collating apparatus or the like through which a web of indeterminate length is to be carried, said mechanism being operable to transfer separated material of a selected length from a source to said web, comprising:

a support member to receive the separated material, and having retainer means thereon engageable with said material to hold the latter securely;

a main shaft rotatably mountable in spaced apart frame elements in said apparatus for rotation about an axis extending coaxially of the shaft, said main shaft being adapted to be driven in synchronism with the collating apparatus; and

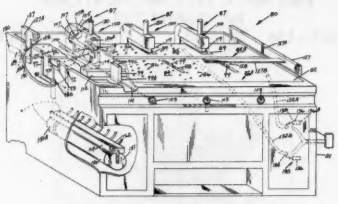
connecting means supported by a bearing assembly for guided reciprocal movement relative to said axis of rotation; said connecting means being operative to carry the support member and coact in response to rotation of the main shaft with support structure in the collating apparatus to move the support member along a path eccentrically of the axis of rotation, whereby separated material is carried by the support member to a transfer position for placement onto said web with preselected positioning.

3,879,029

PIPED OPENING FOR USE IN A GARMENT AND APPARATUS FOR FORMING SAME

John L. Cruden, R.D. 1 Marvin Hollow Rd., Walton, N.Y. 13856

Division of Ser. No. 185,562, Oct. 1, 1971, which is a division of Ser. No. 47,950, June 22, 1970, Pat. No. 3,654,635. This application Mar. 14, 1973, Ser. No. 341,154
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 R **9 Claims**



1. A device for cutting and forming an opening in a readily foldable piece of material comprising:

a head portion and a base portion,

said head portion and base portion being adapted to be disposed on opposite sides of said piece of material in which the opening is to be formed,

a cutter mounted in one of said portions for cutting a slit in said material to define marginal flaps adjacent the slit,

and a folding means mounted on the other of said portions for displacing the marginal flaps of said material adjacent said slit out of the plane of said material to define an opening therein, and

press means for pressing the displaced marginal flaps of said material into overlying position onto said piece of material, said press means circumscribing said cutter.

and a hold down means circumscribing said press means to circumscribe said slit in space relationship thereto, said hold means defining a guide in the displacement of the marginal flaps of said material out of the plane of said material adjacent said slit,

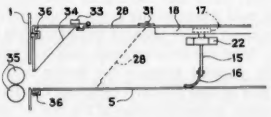
and actuating means connected to said cutter, press means, and hold down means for sequentially controlling the operation of said cutter, press means and hold down means whereby said material is sequentially cut, displaced and pressed onto the material to define an opening.

3,879,030

AUTOMATIC FILM TRANSFER DEVICE FOR MAGAZINES CONTAINING FILM IN SHEETS

Michel Hommerin, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Oct. 2, 1973, Ser. No. 402,807
Claims priority, application France, Oct. 6, 1972, 72.35492
Int. Cl. B65h *5/16*
U.S. Cl. 271—8 R **7 Claims**



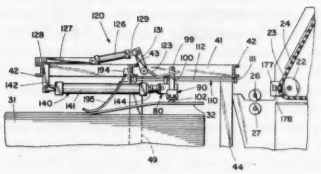
1. A device for the automatic transfer of sheets of exposed film from a magazine having an elongated aperture for letting

said sheets pass therethrough, wherefrom said sheets ejected present an approximately cylindrical residual curvature extending lengthwise, to an automatic developer apparatus having an elongated input slot for admitting said sheets thereto; said device comprising a light-tight housing including a hollow box-shaped transfer portion for receiving said sheets ejected lengthwise, one by one, from said magazine and entering said transfer portion at one side thereof, and having at its rear end an elongated output slot for communicating and registering light-tightly with said input slot of said apparatus; said transfer portion further including means for pushing said sheets, when one thereof is entirely located therein, sidewise towards said output slot, comprising: a reciprocatingly movable pushing plate substantially covering the inner cross-section of said transfer portion perpendicularly to the direction of its reciprocating motion towards and away from said output slot and having a lower edge portion substantially contignuous with the top face of the bottom wall of said transfer portion, and a drive mechanism including a first electric motor for imparting to said pushing plate said reciprocating motion between an utmost forward position, wherein said pushing plate is clear of said transfer section for the introduction of a film sheet therein, and an utmost rearward position, wherefor an edge of said film sheet enters into said developer apparatus input slot, the inner height of said transfer portion, beyond the utmost rearward position of said plate, gradually diminishing towards said output slot so as to flatten out said curved film sheets to facilitate their introduction into the input slot of said developer apparatus.

3,879,031
SHEET FEEDING APPARATUS

George M. Melehan, Downers Grove, Ill., assignor to Chippewa Paper Products Company, Chicago, Ill.

Filed July 23, 1973, Ser. No. 381,628
Int. Cl. B65h *3/08*
U.S. Cl. 271—11 **23 Claims**

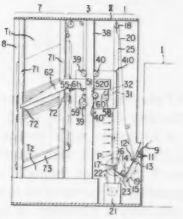


1. A sheet feeding apparatus for delivering sheets of material, one at a time, to a given location from a stack of such sheets at another location, said sheet feeding apparatus comprising carriage means reciprocally mounted for substantially horizontal movement above the stack between a retracted position adjacent to the stack and an advanced position in front of the stack, carriage operating means operatively coupled to said carriage means for movement thereof between said retracted and advanced positions, pickup means reciprocally mounted on said carriage means for substantially vertical movement between raised and lowered positions with respect to the stack, pickup operating means releasably engaging said pickup means for movement thereof between said raised and lowered positions, and control means for causing said pickup operating means to engage said pickup means for movement thereof to said lowered position to grasp the top sheet of material of the stack, thereafter causing said pickup operating means to move said pickup means to said raised position, thereafter causing said pickup operating means to be released from said pickup means, thereafter causing said carriage operating means to move said carriage means to said advanced position to deliver the top sheet to the given location, and thereafter causing said carriage operating means to retract said carriage until said pickup means is again in releasable engagement with said pickup operating means preparatory to a subsequent cycle.

3,879,032
SHEET DISTRIBUTOR DEVICE

Reiji Shirahase, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1973, Ser. No. 425,981
Claims priority, application Japan, Dec. 29, 1972, 48-2641
Int. Cl. B65h *29/58*
U.S. Cl. 271—64 **6 Claims**



1. A sheet distributor device comprising:
sheet conveyor means;
a plurality of tray members;
tray supporting members having a plurality of stages for receiving said tray members;
means for distributing sheets onto said tray members; and means for shifting said tray members;
said tray members being shiftable by said shifting means from one to another of the stages of said supporting member by two or more stages to provide, between the shifted tray and the adjacent tray, a wider entrance for a sheet material through which said sheet distributing means distributes the sheet material.

3,879,033
HAND STAND TRAINER

Robert M. Martin, 90 N. Hudson Ave., Pasadena, Calif. 91101

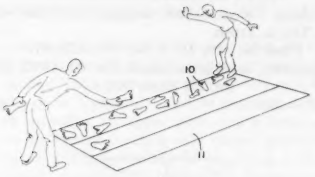
Filed Dec. 26, 1973, Ser. No. 428,385
Int. Cl. A63b *3/00*
U.S. Cl. 272—60 R **6 Claims**

1. A hand stand trainer comprising, a base assembly,
a pair of spaced apart upstanding members on said base,
a pair of spaced apart shoulder supports on said upstanding members positioned above said base,
each of said shoulder supports being L-shaped with a horizontal portion and a vertical portion, said vertical portion extending upwardly from one end of said horizontal portion for engagement with the back portion of the shoulder supported on said horizontal portion to prevent the person from falling over onto his back.

3,879,034
FOOTPRINT ALIGNMENT GAME

Victor Petrusek, 18571 Gottschalk, Homewood, Ill. 60430

Filed June 25, 1973, Ser. No. 373,173
Int. Cl. A63f 9/00
U.S. Cl. 273—1 R 1 Claim



1. A method of playing a game comprising:

providing a plurality of pairs of rigid footprints, each pair comprising a footprint with means thereon denoting a right foot and a footprint with means thereon denoting a left foot, each footprint being further provided with means designating the forward or toe end of the footprint, tossing successively a plurality of said footprints onto a prescribed playing area, the selection of the tossed footprints and the manner of tossing same being such as to result in a plurality of right and left footprints randomly oriented on said playing area.

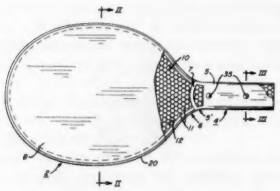
jumping into said area so that the jumper's right and left feet respectively land on a right footprint and a left footprint and with the toe end of each foot extending in the direction of the toe end of each footprint,

and then successively jumping onto each of the remaining footprints, each successive jump landing the right foot on a right footprint and the left foot on a left footprint with the toe of each foot extending in the direction of the toe end of each footprint.

3,879,035
PADDLE BALL RACQUET CONSTRUCTION

James E. Danchulis, and Paul B. Rankin, Jr., both of Pittsburgh, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa., a part interest

Filed Sept. 28, 1972, Ser. No. 292,990
Int. Cl. A63b 49/12
U.S. Cl. 273—73 C 7 Claims

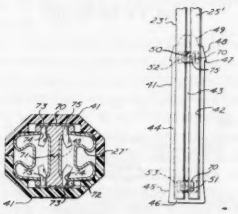


3. A bat for paddle ball games and the like comprising a substantially rigid composite construction including a blade portion and a handle portion, said blade portion being so dimensioned as to define an area which comprises a substantial majority of the area of said bat with said handle portion extending outwardly from said blade portion in substantially the same plane thereof and being so dimensioned as to define the remaining area of said bat, said blade portion comprising a pair of generally parallel spaced apart substantially solid, planar striking members having sandwiched therebetween a honeycomb-like network of lightweight metallic composition, said honeycomb-like network having walls which are substantially perpendicular to said members at substantially all points of contact therewith and which form openings which are covered by said striking members, said honeycomb-like network conforming generally to said blade portion configuration and being slightly smaller than said striking members thereby forming a peripheral margin of space between the outer peripheral edges of said honeycomb-like network, an edging strip for said bat provided in said peripheral margin and engaging the outer peripheral edge of each of said striking members, said honeycomb-like network, each of said striking surfaces and said edging strip extending substantially the length of the handle portion for said bat and forming an integral part thereof, whereby the bat is sufficiently rigid to withstand high-velocity impact of a heavy ball of the paddle ball type without significant fulcruming of the blade portion about the handle portion.

3,879,036
HANDGRIP FOR GAME RACKET

William E. Portz, Geneva, and John T. Kanne, Ashtabular, both of Ohio, assignors to True Temper Corporation, Cleveland, Ohio

Filed Oct. 4, 1972, Ser. No. 294,825
Int. Cl. A63b 49/08
U.S. Cl. 273—73 J 9 Claims



1. Handle structure for a game racket said handle structure comprising a pair of parallel, laterally spaced extensions affording a handle for the racket, said extensions having laterally outwardly facing side edges and front and back surfaces disposed generally at right angles with respect to said side edges; connector means laterally connecting said extensions and maintaining said extensions in spaced relationship; a pair of complementary handgrip sections, each section having means providing spaced, parallel, elongated recesses disposed lengthwise of the section, and an elongated central rib projecting between said extensions; said sections being respectively disposed over said front and back surfaces of said pair of extensions, distal end portions of said extensions nesting within said elongated recesses; means defining cutout means in said rib; said connector means projecting laterally through said cutout means; said connector means comprising a central web adapted to be disposed between said extensions and maintain the lateral spacing thereof; said web having laterally directed flange means overlapping said front and back surfaces of said extensions; means securing said flange means to said extensions; and each said handgrip section having means defining inner depression means aligned with said cutout

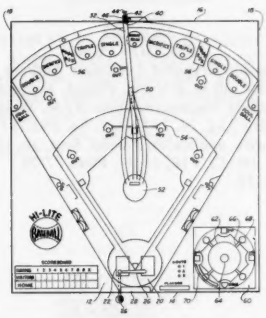
means and extending laterally into said elongated recesses, said flange means being disposed in said depression means.

3,879,037

SIMULATED BASEBALL GAME

Richard Cooke, Brockville, Ontario, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,719
Int. Cl. A63f *7/06*
U.S. Cl. 273—89 **6 Claims**



1. A novel simulated game of baseball comprising: a frame of four walls; a baseboard communicating with said frame, said baseboard having a baseball diamond marked thereon, with points approximating a pitcher's mound and a home base, a bat pivotally mounted on the baseboard and directed to swing horizontally over the homebase point; swing means for swinging the bat; three pitching tubes mounted on said frame, wherein said three pitching tubes diverge away from their vertical plane and curve away from each other; three said pitching tubes leading from a rear wall forward to said pitcher's mound, three said tubes vertically aligned at said rear wall and each of three said pitching tubes having an individual opening both at the rear wall and at the pitcher's mound directed towards homebase the individual openings of said tubes at said pitcher's mound being transversely spaced apart and; means for propelling a ball down each of the tubes from the rear wall to the pitcher's mound, wherein the ball is propelled towards the bat.

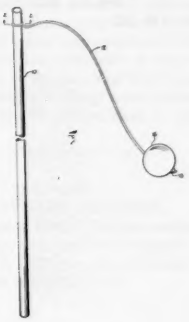
3,879,038

TETHERED BALL APPARATUS

Daniel R. Tremblay, 8521 D'Artagnan St. Leonard, Montreal 457, P. Que., Canada

Filed Apr. 4, 1973, Ser. No. 347,695
Int. Cl. A63b *71/00*
U.S. Cl. 273—95 A **1 Claim**

1. A game comprising a tubular member having approximately 24 inches in length and ¼ inch in diameter, a resilient ball and an elastic cord having approximately 18 inches in length and connecting one end of said member to the ball, the said tubular member being adapted to be held by the hand at the end opposite the elastic cord and to be moved so as to bounce the ball on surrounding surfaces in a back and forth movement, the game being characterized by the tubular member being made of a slightly flexible plastic so that the momemtum of the ball produces a small deflection of the said opposite end of the tubular member, and the elastic cord being made of a rubber-like core, and a stretchable textile tubular sheating surrounding said core, the said sheating having a maximum stretching length substantially smaller than the



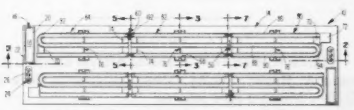
stretching length of said core corresponding to its breaking point.

3,879,039

GAME COMPRISING A PLURALITY OF PIVOTABLE TRACK MEMBERS

John E. Holden, R.D. No. 1, Box 304, Mount Joy, Pa. 19552

Filed Feb. 22, 1974, Ser. No. 445,286
Int. Cl. A63f *7/16*
U.S. Cl. 273—110 **6 Claims**

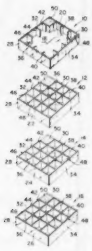


1. A game comprising:
a. A base;
b. A plurality of elongated, longitudinally aligned track members, each track member having a transverse axis and defining a plurality of channels, each channel being aligned with a corresponding channel on the next adjacent track member;
c. Means interconnecting all of said channels to form a single tortuous path for a spheroid;
d. Means on said base rotatably mounting each of said track members to pivot about its transverse axis;
e. Means interconnecting each adjacent pair of track members comprising at least two fingers mounted in a channel on a first track member and extending into the aligned channel on the adjacent track member and at least one finger mounted to and underlying said first track member and extending under the adjacent track member, whereby movement of one of said track members about its transverse axis results in movement of each of the other track members about its transverse axis; and
f. A receptacle mounted on said base to receive a spheroid discharged from said track members.

3,879,040
THREE-DIMENSIONAL TIC-TAC-TOE GAME APPARATUS

W. Ronald Smith, 767 Saint Louis Ave., Eastside, Long Beach, Calif. 90804

Filed Oct. 29, 1973, Ser. No. 410,451
Int. Cl. A63f 3/00
U.S. Cl. 273—130 AC 4 Claims

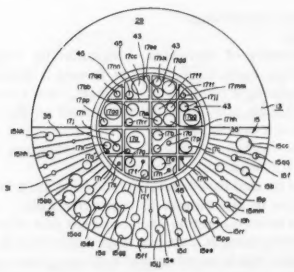


1. A tic-tac-toe game apparatus comprising:
a. a three-dimensional structure comprising at least three like support members stacked together,
b. each of said like support members having vertical and horizontal rows of playing zones,
c. game pieces for selective placement in the playing zones,
d. said support members being separable to permit playing of the game of three dimensional tic-tac-toe with the support members in variety of relative positions, and
e. different indicia means applied to each of said support members for identifying the relative vertical position of the support members and the orientation thereof in a horizontal plane, when the support members are physically or mentally stacked together to form the three-dimensional structure.

3,879,041
METRIC SYSTEM FAMILIARIZATION GAME

Thomas A. Hester, Shelby, Miss., assignor to Bert W. Hayes, Shelby, Miss.; a part interest

Filed May 6, 1974, Ser. No. 467,117
Int. Cl. A63f 9/06
U.S. Cl. 273—130 R 6 Claims

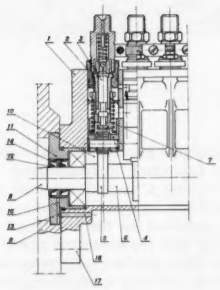


4. A game device for familiarizing the playing opponents thereof with the metric system of measurements, said device comprising a main body member including a plurality of sockets provided therein of predetermined shape and having sizes of metric denomination and various values, a set of peglike members each including a first portion having a predetermined size and shape compatible with the size and shape of one of said plurality of sockets and receptacle means for receiving said set of peglike members, said receptacle means being attached to said main body member, said first portions of said set of peglike members selectively being inserted into said plurality of sockets as the game proceeds, said set of peglike members being divided into at least two groups with each group including means for visibly distinguishing the peglike members thereof from the peglike members of the other groups whereby each player may be dealt a peculiar group, and subsequent to certain predetermined rules having been followed, the player having the most peglike members inserted in the respective sockets being declared the winner.

3,879,042
INJECTION PUMP

Andrzej Krainski; Krzysztof Lendzion; Andrzej Lojek, and Jerzy Wewior, all of Warsaw, Poland, assignors to Warszawskie Zaklady Mechniczne Delta-WZM, Warsaw, Poland

Filed Aug. 29, 1973, Ser. No. 392,783
Claims priority, application Poland, Sept. 16, 1972, 157772
Int. Cl. F16j 15/32; F04b 27/00
U.S. Cl. 277—32 1 Claim



1. An injection pump for internal combustion engines, particularly a multi-section series pump having driving gears lubricated with fuel, comprising in combination a cam shaft; a bearing cover with an opening; two sealing rings mounted in said bearing cover for sealing said cam shaft against the interior of said engine, the space between said sealing rings forming a chamber communicating with the outside environment through said opening in said bearing cover, one of said sealing rings being closer to the drive chamber of said pump, whereby leakage through said one sealing ring closer to the drive chamber flows to the outside of the engine body.

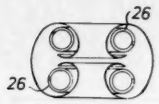
3,879,043
SEALING MEANS

Michael John Caswell Tozer, Stocksfield, England, assignor to The Corrugated Packing and Sheet Metal Company Limited, Newcastle upon Tyne, England

Filed Apr. 12, 1973, Ser. No. 350,351
Claims priority, application United Kingdom, Apr. 14, 1972, 17458/72
Int. Cl. F16j 9/06
U.S. Cl. 277—163 10 Claims

1. A sealing element for the purpose and of the kind referred to which is comprised of a wall of C-shaped cross-section forming a hollow section, end portions of the C shaped

wall continuing towards each other and thence inwardly within the confines of the C-shaped wall and subsequently

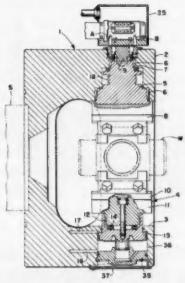


diverging apart from each other thereby providing upper and lower substantially U-shaped terminal segments.

3,879,044
REINFORCED ELASTOMERIC O-RING WITH IMPROVED COMPRESSION SET
Gerald Martin Estes, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 13, 1973, Ser. No. 369,739
Int. Cl. F16j *15/20*
U.S. Cl. 277—227 **7 Claims**

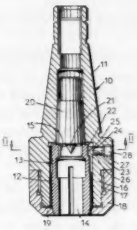
1. An article of manufacture comprising a fluoroelastomer sealant containing therein non-woven radially oriented fibers, at least about 25% of said fibers forming an angle of no more than about 30° from radii drawn through the center and in the plane of said sealant said fibers having an L/D ratio of at least about 15.

3,879,045
INDEXING CHUCK WITH POSITION SENSOR
Milton L. Benjamin, Chagrin Falls; David D. Walker, Solon, and Arthur R. Crawford, West Jefferson, all of Ohio, assignors to Erickson Tool Company, Solon, Ohio
Filed May 6, 1974, Ser. No. 467,397
Int. Cl. B23b *31/36*
U.S. Cl. 279—5 **8 Claims**



1. An indexing chuck comprising a chuck body adapted to be attached to a machine tool spindle; chuck jaws mounted on said body for indexing rotation about a diametric axis and for relative opening and closing motion along said axis; jaw actuating means mounted on said body for opening and closing said jaws; indexing means mounted on said body for indexing of said jaws to a plurality of different positions about said axis; an electronic sensor unit on said machine tool including a pickup head radially outwardly spaced from the periphery of said body in the axial region of said diametric axis; a sensor cap secured to one of said chuck jaws for indexing movement about said diametric axis and having a peripheral surface which passes said pickup head in close proximity thereto during rotation of said chuck; said sensor cap having means on its radially outer surface which produces different electrical impulses in said pickup head and sensor unit according to the indexed position of said sensor cap and chuck jaws; and control means in said sensor unit responsive to such impulses to correlate the operation of the machine tool to engage a selected tool with a selected portion of work clamped between said jaws and indexed to different positions in said chuck.

3,879,046
ROTARY TOOL HOLDERS
Allen John Alford, Palmers Green, England, assignor to Babb Engineering Company, Hertfordshire, England
Filed Jan. 7, 1974, Ser. No. 431,362
Int. Cl. B23b *5/22*
U.S. Cl. 279—48 **9 Claims**

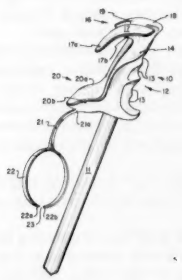


1. In a rotary tool holder of the kind specified comprising:
a. a body adapted for engagement with a rotary driving member and including an axially directed recess extending from a forward end of the body,
b. a collet received within said recess and having a plurality of radially displaceable jaws adapted to grip a shank-forming part of a rotary cutting tool, and
c. a collet-tightening nut in screw-threaded engagement with said body and having operative engagement with said collet, said nut and collet having means whereby rotation of said nut relative to said body causes the collet jaws to be displaced radially to tighten or loosen the grip of said jaws on said tool shank, the improvement comprising:
d. a flat laterally presented face formed on said collet,
e. a bore formed in said body and intersecting said recess, and
f. a driving pin housed in said bore and having an end portion which projects into said recess and in use drivingly engages said flat face of the collet, said pin having a longitudinal axis extending at such an angle to said flat face that a line extending outwardly from the interior of the recess of said body in a plane perpendicular to the axis of said body and normal to said flat face from any point of contact between said flat face and said pin extends into said bore and does not intersect said body at a point on the periphery of said recess.

3,879,047
ICE SKI
John D. MacDonald, 1424 North Crescent Heights, Los Angeles, Calif. 90046
Filed Jan. 17, 1974, Ser. No. 434,092
Int. Cl. A63c *1/00*
U.S. Cl. 280—11.12 **8 Claims**

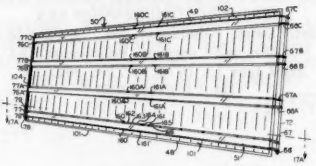
1. An ice ski comprising:
an elongated body, the longitudinal and transverse dimensions of which are substantially the same dimensions as the foot of a user having a front end defining a toe portion, a rear end defining a heel portion, an intermediate portion extending between the toe portion and the heel portion, and further including;
a substantially flat upper surface for carrying one foot of a skier;
a planar lower surface, for contacting an ice surface, at least a portion of said lower surface of the heel portion of said body being longitudinally inclined rearwardly, upwardly to define a fulcrum on said lower surface at the juncture of the heel portion and the intermediate portion about which said body is rocked to move the heel portion relative to the ice surface;
and means on said lower surface of the heel portion for engaging the ice surface to control the direction and speed of said ice ski responsive to the position of the plane of said lower surface of the heel portion in relation to the plane of said ice surface.

3,879,048
SKI POLE HANDLE
Donald A. Penney, 365 Virginia, Salt Lake City, Utah 84102
Filed Dec. 18, 1972, Ser. No. 315,882
Int. Cl. A63c *11/22*
U.S. Cl. 280—11.37 H **10 Claims**



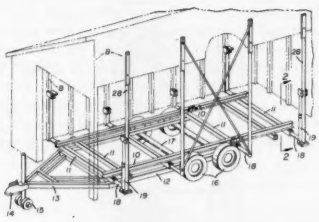
1. A ski pole handle comprising
an elongate body formed to accommodate a skier's hand therearound, arranged to be secured axially to a ski pole; an extension flange projecting normally from the upper end of said body to overlie a portion of the skier's hand; an extension lip projecting from the lower end of said body so as to underlie a portion of the skier's hand; and a clamping means secured to one end of a strap, which strap is connected on its other end to said ski pole handle, wherein the clamping means is formed from a continuous loop, that is broken at a single point, of a resilient material such that the ends thereof are biased towards one another.

3,879,049
SEED COTTON HANDLING AND TRANSPORT PALLET
Glover A. Husky, 3003 Manioca Rd., Lubbock, Tex. 79403
Filed Dec. 26, 1973, Ser. No. 428,384
Int. Cl. B62b *9/04*
U.S. Cl. 280—19 **2 Claims**



1. A pallet comprising an imperforate water-impermeable thin corrugated sheet grooved transversely to its length and a plurality of parallel longitudinally extending like runners, each runner composed of a two like vertically extending outwardly sloped side walls and a bottom flat smooth horizontal sheet, the side walls firmly yet resiliently joined at corners along the total length of their bottom edges to the total length of the left edge and right edges, respectively, of the bottom sheet and extending upwardly therefrom, and said sheet is firmly connected to the top of said walls at regularly longitudinally spaced apart points said runners being flexible transversely to their length so that said pallet is bendable transversely to its length.

3,879,050
TRAILER FOR TRANSPORTING BUILDINGS
Wilbur E. Young, Rt. 7, New Waterford, Ohio 44445
Filed Dec. 19, 1973, Ser. No. 426,200
Int. Cl. B62b *1/04*
U.S. Cl. 280—30 **5 Claims**



1. Apparatus for lifting, transporting and lowering a building having an opening therein through which said apparatus can be moved consisting of a horizontally disposed frame having a plurality of transverse frame members, oppositely disposed sidewardly movable arms carried by said transverse frame members, vertically positioned members on the outer ends of said arms and vertically movable support members on said vertically positioned members for temporary supporting attachment to said building, means for moving said support members so as to lift and lower said building relative to said frame, ground engaging wheels on said frame and a trailer hitch on one end of said frame.

3,879,051

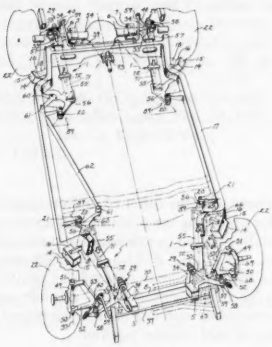
VEHICLE BANKING ARM CONSTRUCTION

Joachim Kolbe, 5126 Haskell Ave., Encino, Calif. 91316

Continuation-in-part of Ser. No. 185,765, Oct. 1, 1971, Pat. No. 3,726,542, and a continuation-in-part of Ser. No. 251,831, May 9, 1972, Pat. No. 3,826,514. This application Jan. 18, 1973, Ser. No. 324,754

Int. Cl. B62d 7/06; B60g 11/20

U.S. Cl. 280—96.2 R 14 Claims



1. In a vehicle having a superstructure and a banking support connecting the superstructure, at its forward end to a wheel spindle carrying, wheel supported, rigid front axle structure, and at its rearward end to a wheel supported rigid rear axle structure, said banking support comprising a plurality of pairs of cooperating roll banking arms, each said roll banking arm including a longitudinally extending torsionally operated resilient spring means a first support member mounted on said spring means at its inner end, a first ball and socket joint connecting said first support member to said superstructure, a second support member mounted on said spring means at its outer end, and a second ball and socket joint connecting said second support member to the respective rigid axle structure, said second support member including a side arm bearing at its end against an axle supported resilient multiturn cushion of polyurethane based material disposed near the outer end of the resilient spring means and said first support member including a side arm bearing at its end against a resilient multiturn cushion of polyurethane based material supported by the superstructure and disposed intermediate the length of the spring means; wherein the improvement comprises a torque control pivot means pivotally interconnecting at least one spring means of each pair of cooperating roll banking arms to the respective axle structure, said torque control pivot means being mounted on said at least one spring means near the outer end thereof to secure and control the orientation of said respective axle structure and to carry the axle torque pressures to the superstructure through said resilient means.

3,879,052

VEHICLE SUSPENSION SYSTEM

James M. Butler, 1521 W. Teton Dr., Peoria, Ill. 61614, and Gerald P. Simmons, 1006 Miller, Washington, Ill. 61571

Continuation of Ser. No. 163,575, July 19, 1971, Pat. No. 3,740,070. This application Apr. 4, 1973, Ser. No. 347,942

Int. Cl. B60g 5/00

U.S. Cl. 280—104.5 R 7 Claims

1. In a vehicle having a chassis frame supported above ground by at least one rear axle having end portions carrying ground engaging means, a suspension system comprising:

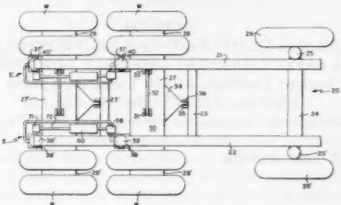
Said rear axle having a forward portion and a rearward portion;

A first support mounted to the rearward portion of said rear axle adjacent one end portion underlyingly of said chassis frame;

A second support mounted to the rearward portion of said rear axle adjacent the other end portion underlyingly of said chassis frame;

Hydraulic suspension means connecting said first and second supports to said chassis frame;

A connector member fixed to the forward portion of said rear axle substantially intermediate said first and second



supports, said connector member having an end portion;

Means pivotally connecting the end portion of said connector member to said chassis frame;

Each hydraulic suspension means comprising a cylinder containing fluid;

A reciprocal piston received within said cylinder and dividing same into an upper compartment and a lower compartment;

Passage means within said piston for communicating said upper and lower compartments;

Means connecting said cylinder to said chassis frame;

Means connecting said reciprocal piston to the related support.

3,879,053

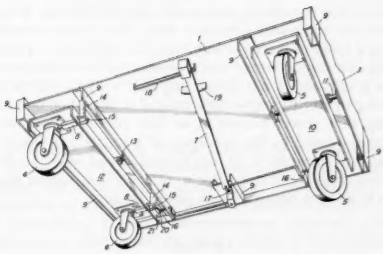
MOBILE DISPLAY CART

William J. Chvala, Tucker, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed June 27, 1973, Ser. No. 374,202

Int. Cl. B60p 1/24

U.S. Cl. 280—111 8 Claims



1. A mobile display cart adaptable for transporting stacked product from a production facility to a retail outlet and displaying said products at the retail outlet, including the combination of a cargo bed, a back panel, a pair of end panels, and a plurality of castors, said cargo bed being supported and mounted on said castors and being bounded on the back side by said back panel and on the end sides by said two end panels

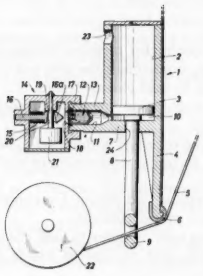
and wherein the improvement comprises activating means mounted below the cargo bed and cooperating with said cargo bed to allow the cart to be wheeled on said castors to a display area in an upright position and upon activation at the display location, to tilt the cargo bed toward the back panel for product retention purposes, said activating means comprises a foot operated lever positioned below the cargo bed, said foot operated lever being connected to a retractable tilt locking pin arrangement that is in turn associated with a pair of castor supporting columns which are laterally spaced at respective ends of the cargo bed and fixed to said cargo bed by a pair of pivot shaft members which are positioned forward of the center line of the cart and mounted to the bottom of the cargo bed on the supporting frame assembly of said cart.

3,879,054

DEVICE FOR TIGHTENING OF A BELT FORMING PART OF A SAFETY HARNESS ASSEMBLY FOR VEHICLES

Oskar Lenhart Lindblad, 440 20 Vargarda, Sweden

Filed Jan. 23, 1973, Ser. No. 326,135
Claims priority, application Sweden, Jan. 28, 1972, 958/72
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **4 Claims**



1. A device for the tightening of a belt forming part of a safety harness assembly of a safety belt for vehicles in case of abnormal changes of speed of the vehicle, as for example during a collision comprising a safety belt part, a sensor means capable of sensing said abnormal speed changes and giving off a gaseous pressure pulse in its activated condition, a power means capable of being driven by said gaseous pressure pulse and in its activated condition capable of giving at least one portion of said belt part a movement in a sidewards direction relative to the normal extension of said belt part thus forming at least one sidewards direction loop, said sensor means including a body of inertia which can move between a position locking said sensor means and a position in which said sensor means is released, a bar supporting said body of inertia, said bar being of a brittle material arranged in unbroken condition keeping said power means in an idle condition and by its breakage, caused by the tendency of said body of inertia to continue its movement at unchanged speed such as at an unnormal braking of the vehicle, releases said sensor means which in its turn activates said power means.

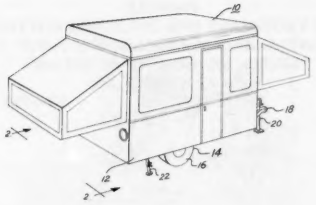
3,879,055

VEHICLE STABILIZING DEVICE

Mark N. Sill, Bristol, and Delton F. Miller, Elkhart, both of Ind., assignors to Marksill Specialties Inc., Bristol, Ind.

Filed Dec. 29, 1972, Ser. No. 319,883
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **5 Claims**

1. A vehicle stabilizing device comprising upper and lower elongated members in telescopic relation to one another, a mechanism for extending said members in relation to one another to support a part of the vehicle, said mechanism including a body connected to one of said elongated members, a pair of levers pivoted to one end to said body and having a means defining a hole for receiving the other of said elongated members, the means defining said holes in said levers being offset angularly from the longitudinal plane of the respective lever, spring means for retaining one of said levers in releasable engagement with the other of said elongated members, a third lever for operating the other of said levers to extend said members axially relative to one another, a means for pivotally attaching an end of one of said elongated members to the vehicle near the lower part thereof for movement from a substantially vertical position to an angular position therefrom, and a means on said last mentioned means for retaining said members in said angular position.

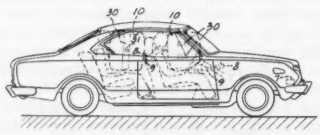


3,879,056

SAFETY GAS BAG STRUCTURE

Takayoshi Kawashima; Akio Tange; Seiichi Yamamoto, all of Nagoya; Takashi Baba; Yutaka Kondo, both of Toyota; Choji Nozaki, Nagoya, and Toshihiko Sakai, Kasugai, all of Japan, assignors to Toyoda Boshoku Kabushiki Kaisha, Kariya-shi; Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, all of, Japan

Filed Feb. 21, 1973, Ser. No. 334,407
Claims priority, application Japan, Feb. 21, 1972, 47-18256; Feb. 29, 1972, 47-20798
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **30 Claims**



1. A gas bag employed for a gas bag device which is attached to a high speed moving apparatus such as an automobile and the like in the folded condition, and into which high pressure gas is introduced to be packed in order to protect occupants of said high speed moving apparatus by detecting the sudden stop of said moving apparatus, said gas bag comprising a hollow bag body formed of sheet material having substantially no air permeability and elasticity, a gas introducing hole means provided at a portion of said hollow bag body connecting with a high pressure gas supplying source and at least one relatively thin, narrow restraining member provided in said hollow bag body for restraining a free deformation of said hollow bag body inn the inflated condition, due to the pressing of the occupant, breakable means forming a part of said restraining member, said last named means breaking when the tensile force applied to said restraining member becomes larger than a predetermined value due to the press-

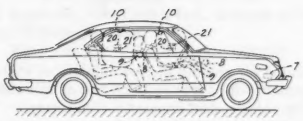
ing of the occupant, which value is less than the value required to rupture the body, whereby when said occupant presses said inflated bag body in the sudden stop of said moving apparatus, said breakable means is broken permitting further deformation of the bag body and the rebounding force of said bag body against said occupant is remarkably reduced.

3,879,057

SAFETY GAS BAG STRUCTURE

Takayoshi Kawashima; Akio Tange; Seiichi Yamamoto, all of Nagoya; Takashi Baba; Yutaka Kondo, both of Toyota; Choji Nozaki, Nagoya, and Toshihiko Sakai, Kasugai, all of Japan, assignors to Toyoda Boshoku Kabushiki Kaisha; Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, all of Aichi-ken, Japan

Filed Feb. 26, 1973, Ser. No. 336,010
Claims priority, application Japan, Feb. 28, 1972, 47-20434
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **27 Claims**



1. A gas bag employed for a gas bag device which is attached to a high speed moving apparatus such as an automobile and the like in the folded condition, and into which high pressure gas is introduced to be packed in order to protect occupants of said high speed moving apparatus by detecting the sudden stop of said moving apparatus, said gas bag comprising:

a hollow bag body formed of sheet material having substantially no air permeability and elasticity;

a gas introducing hole means provided at a portion of said hollow bag body connecting with a high pressure gas supplying source;

at least one exhausting hole means having a predetermined area of an opening provided at a portion of said hollow bag body different from the portion where said gas introducing hole means is provided;

at least one restraining member engaging said hollow bag body for restraining the free deformation of said hollow bag body due to the pressing of the occupant thereto in the inflated condition; and

at least one blocking member made of material having substantially no air permeability blocking said opening of said exhausting hole means in such a manner that the gas can not escape from said hollow bag body through said opening of said exhaust hole means,

said blocking member being connected to said restraining member and being released from blocking said opening of said exhaust hole means by being pulled by said restraining member when the tensile force, larger than a predetermined value, is applied to said restraining member due to the pressing of the occupant to said hollow bag body,

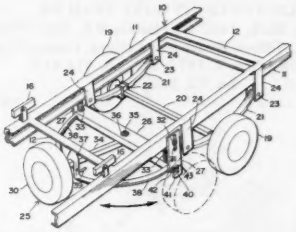
whereby, to exhaust the gas from said hollow bag body through said exhausting hole means by releasing said blocking member from blocking said opening of said exhaust hole means and remarkably to reduce the pressure of the gas in said hollow bag body and a rebounding force of said hollow bag body against said occupant in a moment of said occupant pressing to said inflated bag body in the sudden stop of said moving apparatus.

3,879,058

SPARE WHEEL ASSEMBLY FOR TRAILERS

Elmer H. Horn, 799 N.W. 98th St., Miami, Fla. 33150

Filed June 28, 1974, Ser. No. 484,456
Int. Cl. B60s *9/22*
U.S. Cl. 280—150 A **4 Claims**



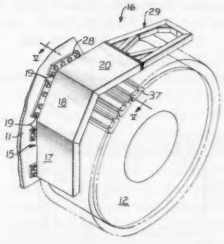
1. A spare wheel assembly unit for a trailer comprising a pair of vertically disposed end plates, a cross member extending between said end plates, a spare wheel, an axle connected at one end to said spare wheel, means pivotally mounting the other end of said axle to the center of said cross member, bracket means securing said axle and said wheel at a mid-position between said end plates and locking means securing said axle to said end plates upon swinging said axle about said pivot means whereby when the spare tire and axle are swung laterally about said pivot means to either side adjacent a main wheel assembly it can be operatively used as an auxiliary wheel assembly to support the trailer in the case of a flat tire or other damage to a main wheel assembly.

3,879,059

FENDER CONSTRUCTION FOR WHEEL LOADERS

Richard J. Gibes, Plainfield, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Jan. 7, 1974, Ser. No. 431,100
Int. Cl. B62d *25/16*
U.S. Cl. 280—153 R **14 Claims**



1. In an earthworking vehicle comprising a frame having a pair of laterally spaced ground engaging wheels rotatably mounted on a front end thereof and an operator's cab mounted on said vehicle, rearwardly of said wheels, the invention comprising a fender comprising a rearward portion mounted on a side of said frame to extend at least generally vertically downwardly from above one of said wheels a substantial distance behind said wheel in covering relationship therewith and an upper portion secured to said rearward portion to extend at least generally horizontally towards a front of said vehicle to substantially cover the top of said wheel, said upper portion including a forward section extending forwardly in cantilevered relationship on said upper portion, said forward section constituting a reinforced open frame construction, including a plurality of integrally connected

reinforcing sections forming the perimeter thereof, positioned to permit a substantially unobstructed view along an imaginary line of sight, extending from said operator's cab towards a front end of said vehicle in approximate tangential relationship with respect to said wheel.

3,879,060

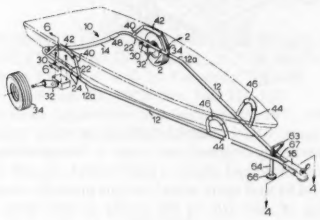
LIGHTWEIGHT BOAT TRAILER

Ramon Allan Slack, 1403 Glenburnie Rd., Port Credit, and David N. A. Talbot, Hawthorne Cottage, Como, Canada

Filed Nov. 9, 1973, Ser. No. 414,412

Int. Cl. B60p *3/10*

U.S. Cl. 280—414 B **10 Claims**



1. A boat trailer for lightweight boats of the type having an outwardly and downwardly extending lip which extends about the upper edge of the boat hull comprising:

a. a towing frame,

b. wheel means mounted on said towing frame for supporting said frame for transportation thereof,

c. support rail means projecting upwardly from opposite sides of said frame adapted to fit in an underlying supporting relationship with respect to spaced portions of said lip of the boat to support a boat in a spaced relationship with respect to said frame and secure the boat against longitudinal and lateral movement with respect to the frame.

3,879,061

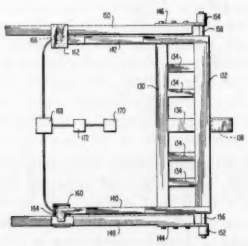
LOAD LEVELLING AND ANTI-SWAY TRAILER HITCH

Woodrow F. Thompson, Hwy. 80, West Forest, Miss. 39074

Division of Ser. No. 255,238, May 19, 1972. This application Oct. 9, 1973, Ser. No. 404,584

Int. Cl. B62d *53/00*

U.S. Cl. 280—405 R **9 Claims**



1. A draw bar for a trailer hitch comprising truss means adapted to be disposed beneath the rear of a vehicle adjacent the rear bumper thereof and extending substantially the full width of the vehicle, forwardly extending arm means rigidly secured to opposite ends of said truss means for connecting the draw bar to the frame of said vehicle, hitch connecting means pivotally connected to said truss means intermediate the ends thereof and extending rearwardly therefrom for detachably connecting a trailer hitch thereto and resilient means disposed between said truss means and said hitch connecting means for controlling the angle at which said hitch connecting means will be disposed relative to the truss menans.

3,879,062

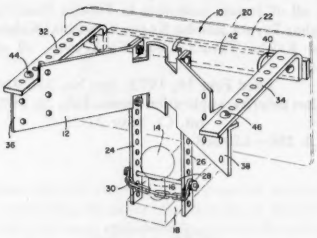
TRAILER HITCH GUIDE

Daniel C. Miller, Rt. 2, Box 355, Bethel Island, Calif. 94561

Filed Aug. 12, 1974, Ser. No. 496,486

Int. Cl. B60d *1/06*

U.S. Cl. 280—477 **9 Claims**



1. Apparatus for guiding the leading end of trailer tongue into engagement with a mating hitch ball of an automobile or other towing vehicle, said apparatus comprising:

a rearwardly opening V-shaped element superimposed over and around the hitch ball on the towing vehicle and adapted to intersect the leading end of the trailer tongue when the towing vehicle is moved toward the trailer to guide the leading end of the tongue into position over the hitch ball;

means for demountably fixing the V-shaped element to the towing vehicle, said means being relatively below the position of the hitch ball; and

support means attached to the V-shaped element and adapted to rest against a relatively rigid generally vertical portion of the towing vehicle relatively above the position of the hitch ball to limit movement of the V-shaped element when intersected by the leading end of the trailer tongue and transmit the force of such intersection directly to the towing vehicle.

3,879,063

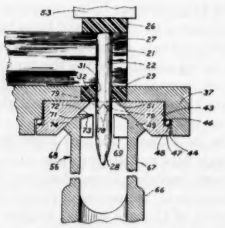
METHOD FOR SIMULTANEOUSLY CUTTING AND HEADING PLASTIC STUDS

Heiko T. de Man, Alameda, Calif., assignor to Velo-Bind, Inc., Sunnyvale, Calif.

Division of Ser. No. 114,557, Feb. 11, 1971, Pat. No. 3,689,185. This application July 12, 1972, Ser. No. 271,020

Int. Cl. B29c *17/10*; **B42d** *1/06*

U.S. Cl. 281—21 R **3 Claims**



1. A method of cutting and heading a thermo-plastic stud comprising providing a tool having a proximal shank, means

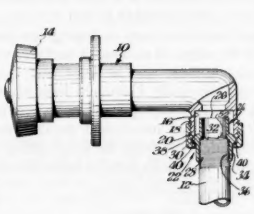
on said shank cooperable with external means for revolving said shank about an axis of rotation, at least one arm of resilient material extending distally of said shank and normally slanting distally outwardly, and a head on the distal end of said arm, said head having an external conical cam surface, a transverse distal end surface, and a blade on the inner edge of said head, revolving said tool about said axis of rotation, providing a second conical cam surface complementary to said first cam surface on said tool, moving said conical surfaces toward each other along said axis of rotation, said stud initially extending through a hole in said second cam surface and extending along the axis of said tool inward of said head and being fixed in position relative to said cam surface said head being forced inward of said axis as said cam surface and said tool move toward each other to simultaneously cut off said stud and deforming the severed end of said stud by splaying said end outwardly and axially to form a rivet-like head, said arm being resilient enough so that said head bends inward and rigid enough so that said blade cuts said stud and forms said rivet-like head.

3,879,064

COMBINATION COUPLING

Carmen J. Lagarelli, New Castle, Del., assignor to Speakman Company, Wilmington, Del.

Filed Jan. 22, 1973, Ser. No. 325,627
Int. Cl. F16l *25/00*
U.S. Cl. 285—12 **3 Claims**



1. A combination inlet swivel for a ground joint coupling, the inlet swivel comprising a cylindrical sleeve with opposite open ends, a continuous annular outwardly extending beveled projection on the exterior of the sleeve approximately midway between the opposite open ends thereof, the annular beveled projection dividing the sleeve into substantially equal first and second portions, the first portion having a smooth-walled interior surface for sweat connection of tubing and interior stop means for limiting inward movement of tubing inserted therein, the second portion having a threaded interior surface for connection of threaded pipe thereto, the beveled projection being adapted for mating engagement with the inlet portion of a valve when the inlet swivel is oriented for either sweat or threaded connection.

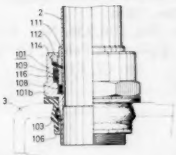
3,879,065

PIPE COUPLING ASSEMBLY USABLE FOR SANITARY APPLIANCES

Yoshikazu Kobayashi, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1973, Ser. No. 391,594
Claims priority, application Japan, Dec. 26, 1972, 47-481006; May 17, 1973, 48-4854118
Int. Cl. F16l *35/00*
U.S. Cl. 285—39 **23 Claims**

1. An improved pipe coupling assembly usable for sanitary appliances of the type being provided with a liquid inlet passage having an objective body wall defining said liquid inlet passage, a liquid inlet end at one end of said passage and an annular liquid outlet end at an opposite end of said passage comprising in combination, a cylindrical main body, a flexible cylindrical body provided with upper and lower ends and surrounding the lower part of said main body, the flexible cylindrical body normally having an external diameter smaller than the smallest internal diameter of said liquid inlet passage, the axial length of the flexible cylindrical body being longer than the length of said liquid inlet passage, means for diametrically expanding said flexible cylindrical body to an extent wherein the maximum diameter of the flexible cylindrical body exceeds the diameter of the annular liquid outlet end of the liquid inlet passage in response to axial turning of said main body in order to join the lower part of said pipe coupling assembly with the objective body wall, and means for joining the upper part of said main body with a water pipe.

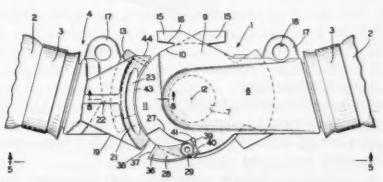


3,879,066

AIR BRAKE HOSE COUPLING MEMBER CONSTRUCTION

Richard R. Kozinski, 2205 Dunkerth Dr., N.W., Canton, Ohio 44708

Filed Dec. 20, 1973, Ser. No. 427,025
Int. Cl. F16l *35/00*; **B60d** *1/08*
U.S. Cl. 285—69 **8 Claims**



1. An air brake hose coupling member construction of the type having generally tubular body means with a neck at one end adapted to be connected to an air hose, and with arcuate locking lug means projecting outwardly from the other end of the body means; the tubular body means having an outer surface, a coupling face and a curved end surface extending between said outer surface and coupling face; in which L-shaped flange means is formed on the body means adjacent the neck and projects upwardly and forwardly therefrom; and in which the locking lug means and L-shaped flange means are adapted to engage L-shaped flange means and locking lug means, respectively, of another coupling member similar to said coupling member, to couple said members together when the members are placed in abutting relationship and rotated oppositely with respect to each other; the improvement including a circumferentially extending recess formed in the curved end surface of the tubular body means, said recess being located adjacent to and below the locking lug means when the member is oriented to coupled position; rigid finger means having a swinging end and an opposite generally fixed end, said finger means conforming to the general shape and size of the recess; pin means pivotally mounting the finger means on the body means within the recess for movement of the finger means swinging end in a generally radial direction with respect to the tubular body means curved end surface between retracted and extended positions into and out of said recess, respectively; and the swinging end being located cir-

cumferentially adjacent the locking lug means, and the pivot pin means being located below said swinging end when said finger means is in retracted position whereby said finger means moves downwardly under the influence of gravity out of the recess to extended position.

3,879,067

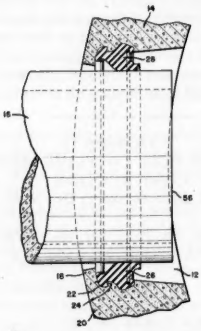
PIPE JOINT

Lewis R. Keyser, Dayton, Ohio, assignor to Price Brothers Company, Dayton, Ohio

Division of Ser. No. 200,936, Nov. 22, 1971, Pat. No. 3,744,806. This application Feb. 2, 1973, Ser. No. 329,217

Int. Cl. F16l *5/02*

U.S. Cl. 285—110 **8 Claims**



1. A joint comprising:

a. a substantially imperforate wall,

b. means defining an opening through said wall,

c. portions of said wall being offset and defining a radially inwardly projecting annular shoulder,

d. a resilient, annularly shaped gasket mounted in said opening,

e. said gasket in cross section including a substantially triangular main section,

f. a first apex of said main section defining a sealing portion of said gasket.

g. a second apex of said main section positioned in said wall adjacent an outer surface thereof,

h. an outer lip extending from said second apex inwardly of said opening in said wall,

i. said outer lip and an outer face of said main section extending between said first and second apexes defining a first groove,

j. a first relatively rigid reinforcing member received in said first groove and preventing dislocation of said second apex radially inwardly of said opening,

k. an inner lip extending from a third apex of said main section,

l. said inner lip and an inner face of said main section extending between said first and third apexes defining a second groove,

m. a second relatively rigid reinforcing member received in said second groove and preventing movement of said third apex radially inwardly of said opening,

n. anchoring portions of said gasket being anchored in said wall radially outwardly of said shoulder, and

o. said sealing portion of said gasket projecting radially inwardly of said opening beyond said annular shoulder.

3,879,068

SUPPORT DEVICE FOR FLUID CONTROL SYSTEMS

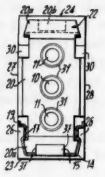
Harald Stampfli, Geneva, Switzerland, assignor to Lucifer S.A., Geneva, Switzerland

Filed Dec. 6, 1972, Ser. No. 312,721

Claims priority, application Switzerland, Dec. 17, 1971, 18532/71

Int. Cl. F16l *39/00*

U.S. Cl. 285—137 R **6 Claims**



1. A support device for apparatuses forming part of a fluid control system, said device comprising at least two juxtaposed blocks, at least one connecting member pressing one surface of one of said blocks against a surface of the other block, at least one passage in each of said blocks opening into said surfaces, the thus contiguous surfaces of said at least two blocks being provided adjacent their common edges when said surfaces are pressed against one another, with conformations which together form one element of a three directionally rigid coupling of which the other element is said at least one connecting member, said conformations including lips forming an extension of part of the edges of said block surfaces which are pressed against one another, said at least one connecting member comprising a generally U-shaped bent elastic strip, said strip including means engaging said lips to provide a clip engaged thereover, said last mentioned means comprising extensions projecting angularly from the longitudinal edges of the base of the U and substantially parallel to the arms thereof.

3,879,069

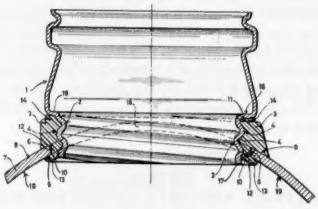
PIPE CONNECTION

Albertus Anthony Oostenbrink, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Sept. 28, 1973, Ser. No. 401,967

Int. Cl. F16l *41/00*

U.S. Cl. 285—162 **12 Claims**



1. A pipe connection between a first pipe and an opening in a curved wall of a second pipe, said connection comprising an elastic recessed sealing sleeve which extends into the opening in the curved wall of the second pipe and engages said wall on the inside and outside thereof, said first pipe having an external screw thread, said sleeve having an internal thread substantially corresponding to the external screw thread on said first pipe and in threaded engagement therewith, said first pipe having a shoulder which abuts against the upper end of the sealing sleeve, said sleeve having a peripheral end part situated in the interior of the second pipe and corresponding to

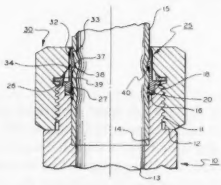
the curvature of said curved wall, said peripheral end part being of substantially uniform thickness.

3,879,070

TUBE COUPLING MECHANISM

Edward F. Russ, Baldwinsville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 22, 1974, Ser. No. 462,836
Int. Cl. F16l *19/06*
U.S. Cl. 285—342 5 Claims



1. Apparatus for coupling a tube to a fitting including

a nipple attached to said fitting having an axially aligned aperture passing therethrough, the aperture further containing an enlarged bore adapted to receive said tube therein and a second enlarged counterbore adapted to receive a deformable gasket, said bore and counterbore extending inwardly from the end face of said nipple, said nipple further having an external thread formed thereon extending rearwardly from said end face and being terminated at a predetermined depth by a radially extending shoulder,

a pressure deformable gasket positioned within said counterbore intermediate said tube and said nipple,

a compressible sleeve passing over said tube and having a flange seatable against the end face of said nipple, said sleeve further including a hub extending axially from said flange a predetermined distance into said counterbore whereby the hub deforms the gasket into sealing contact between said tube and said nipple when the flange is seated against the end face of said nipple, and an elongated body section extending axially from said flange in a direction opposite to said hub, the body having a circumferentially extended tooth formed on the interior wall thereof,

a compression nut threadable upon said nipple having first and second camming surfaces positioned thereon to compress the free end of the sleeve body and the circumferentially extended tooth into contact against the tube as the nut is threaded onto the nipple, and

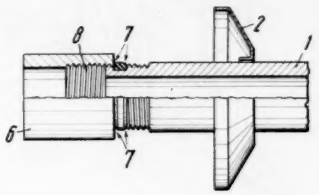
a control surface upon said nut positioned in relation to said camming surfaces such that the free end of the sleeve is compressed under a predetermined load into sealing contact against the tube by said first camming surface and the circumferential tooth is compressed under a predetermined load into holding contact against said tube by said second camming surface when the control surface is seated against the shoulder of said nipple.

3,879,071

THREADED CONNECTION SEAL

Franz Josef Göckler, Olpe, Germany, assignor to Hubert Schell KG, Olpe, Germany

Filed Oct. 11, 1973, Ser. No. 405,596
Claims priority, application Germany, Oct. 11, 1972, 2249804; Dec. 12, 1972, 2260728
Int. Cl. F16l *17/02*
U.S. Cl. 285—347 4 Claims



1. In a connecting member having a threaded portion arranged to engage a mating thread of a further connecting member to establish a sealed connection in a fluid conducting system, the threaded portion being provided with an annular groove disposed intermediate the ends of the threaded portion with the threaded portion presenting a continuous thread between each end thereof and the groove, the entire region occupied by the groove being coextensive with a part of the mating thread of the further connecting member when the connecting member and the further connecting member are in full engagement, and the connecting member including a sealing ring of plastic material seated in the groove, the improvement wherein: the base of said groove has a knurled surface; said sealing ring is of a temperature-resistant, glass fiber-reinforced material having high cold-flow properties; and said sealing ring presents a chamfer at the annular edge thereof which is remote from said groove base and which faces in the direction of engagement between said connecting member and such further connecting member, said chamfer defining a frustoconical surface, and the radial location of a point on the chamfer surface corresponding to the radial location of that end of the thread of the further connecting member which first engages said threaded portion of said connecting member, whereby said sealing ring is pressed against said knurled surface by the further connecting member to prevent rotation of said ring and said ring is caused to conform to the mating thread of the further connecting member during further engagement between the members, so that said ring sealingly engages both members.

3,879,072

SAFETY LATCH

James R. Tuley, Detroit, Mich., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

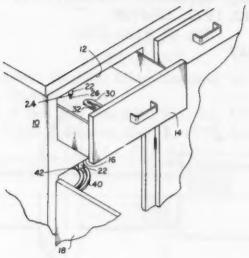
Filed Mar. 25, 1974, Ser. No. 454,708
Int. Cl. E05c *17/06, 17/38*
U.S. Cl. 292—268 3 Claims

1. A safety latch for use in securing a movable member such as a door or drawer within a suitable opening in a fixed support such as a cabinet, said latch comprising:

a vertical prong secured to the periphery of the opening and extending downward, said prong having a lower thin section and an upper thicker region; and

a horizontally elongated prong receiving resilient plate secured to the member, said plate having a slot with a front disposed wide section through which said upper region of the prong can extend and a rear disposed narrow section through which said thin prong section can extend and through which the thick section cannot extend, the positions of plate and prong being so chosen that the member with the thick prong section engaging

the front section of the slot can only be opened sufficiently to enable a user to insert a finger, the member



being only openable fully after the user has pressed his finger down on the plate to enable the thin prong section to engage the rear section of the slot.

3,879,073

COLLISION FORCE ABSORBING ARRANGEMENT IN VEHICLES

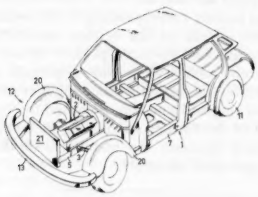
Stig Ivar Norlin, Trollhattan, Sweden, assignor to Saab-Scania AB, Sodertalje, Sweden

Filed Nov. 21, 1973, Ser. No. 418,127

Claims priority, application Sweden, Nov. 24, 1972, 15321/72

Int. Cl. B60r *19/02*; **B62d** *21/18*

U.S. Cl. 293—1 **10 Claims**



1. In a vehicle constructed to undergo collision force absorbing deformation during a collision in a lengthwise direction of the vehicle: a chassis unit disposed symmetrically in the vehicle and extending lengthwise of the vehicle; driving means anchored to said chassis unit; a vehicle body secured to said chassis by means of fasteners which are designed to yield and/or break at exceptionally high loads in a lengthwise direction in order to allow displacement between the vehicle body and the chassis unit during collision; and means associated with said chassis unit and said body having mutually engageable contact surfaces disposed and arranged to work in conjunction with each other such that load transfer between said body and said chassis unit takes place along lines forming an angle with a vertical plane containing the central lengthwise axis of the vehicle, said load transfer tending to split said body during a lengthwise collision.

3,879,074

VEHICLE BUMPER ARRANGEMENT

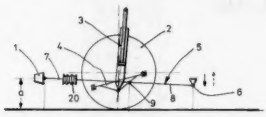
Conrad Oehlerking, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Jan. 24, 1974, Ser. No. 436,119

Claims priority, application Germany, Feb. 3, 1973, 2305417

Int. Cl. B60r *19/04*

U.S. Cl. 293—68 **4 Claims**



1. In a vehicle having at least one end thereof bumper means including a bumper oriented transversely of the vehicle and located at a distance from a traveled surface on which the vehicle is supported, the improvement of means for maintaining the distance between the bumper and the traveled surface generally constant comprising:

a. support means for supporting the bumper, the support means including lever means mounting at one end thereof the bumper,

b. first means mounting the support means and coupled to the other end of the lever means, and

c. second means mounting the support means and including an arm coupled at one end to a wheel for the vehicle and coupled at its other end to the vehicle body, the lever means being coupled intermediate its ends to the arm of the second mounting means intermediate the ends of said arm,

the first and second mounting means imparting different movements to the support means upon movement generally perpendicular to the traveled surface by a vehicle body portion located adjacent the bumper, the different movements imparted to the support means effecting movement of the bumper relative to the adjacent vehicle body portion opposite in direction and approximately equal in amplitude to the movement of the adjacent vehicle body portion.

3,879,075

ENERGY ABSORBING BUMPER GUARD

Clifford E. Hale, Ann Arbor, Mich., assignor to Gulf & Western Manufacturing Company, Dearborn, Mich.

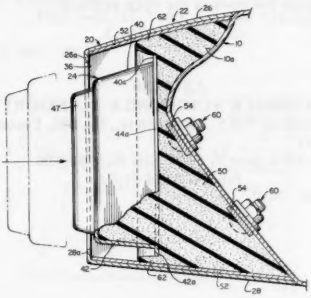
Filed Mar. 19, 1974, Ser. No. 452,616

Int. Cl. B60n *19/02*

U.S. Cl. 293—71 R **21 Claims**

1. An energy absorbing device for a vehicle bumper comprising telescopically associated inner and outer members, said inner member having an end disposed in said outer member and said members being relatively reciprocable between extended and collapsed dispositions in which said end of said inner member is disposed respectively in first and second positions relative to said outer member, and compressible cellular material in said outer member in the area between said first and second positions, at least a portion of said end of said inner member and a portion of the inner surface of said outer member being relatively dimensioned transversely of the direction of reciprocation so that said end and inner surface portions are radially spaced for a portion of said cellular

material to exude therebetween during movement of said end from said first toward second position, and lining means be-



tween said inner surface and cellular material to prevent adherence of said cellular material to said inner surface.

3,879,076

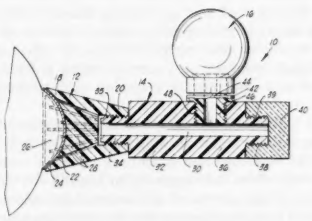
METHOD AND APPARATUS FOR APPLYING AND REMOVING A SOFT CONTACT LENS

Robert O. Barnett, 4205 Northwest 22, Oklahoma City, Okla. 73107

Filed Dec. 27, 1973, Ser. No. 428,705

Int. Cl. A61f 9/00

U.S. Cl. 294—1 CA **8 Claims**



1. A soft contact lens applicator for applying and removing a soft contact lens from the eye comprising:

an eyepiece member having a first end portion with a concave surface formed thereon for engaging the soft contact lens, a second end portion, and a plurality of ducts intersecting the concave surface in spaced relation on the concave surface and communicating the concave surface with the second end portion, said concave surface being formed to include a top portion, a bottom portion, a center portion, a right side and a left side portion, the right side portion and the left side portion each including a recessed portion recessed from the concave surface of the top portion, the bottom portion, and the center portion, so that when the soft contact lens is removed the sides of the lens are drawn by vacuum force into the recesses of the right side portion and the left side portion thus breaking the seal between the eye and the lens; and vacuum means attached to the second end portion of said eyepiece member and in communication with the plurality of ducts for applying a vacuum force through the ducts to aid in applying and removing the soft contact lens.

3,879,077

LIFTING APPARATUS

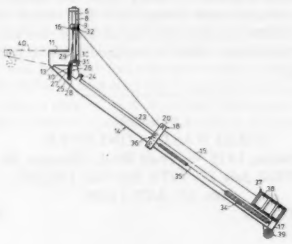
Hermes George Celio, Flat 10, 20 Waratach St., Ruschcutters Bay 2011, New South Wales, Australia

Filed Aug. 20, 1973, Ser. No. 389,558

Claims priority, application Australia, Sept. 5, 1972, 331/72

Int. Cl. B66c 1/00

U.S. Cl. 294—67 R **34 Claims**



1. Lifting apparatus adapted to be used in conjunction with a crane or the like, said apparatus comprising a first member adapted at one end to be vertically suspended from the crane, a second member mounted on said first member for longitudinal movement thereon and including means adapted to support an article to be lifted which has its center of gravity spaced from the accessible line of lift, counterbalance arm means pivotally connected at one end thereof to the end of said second member remote from said one end of said first member, and intermediate means connecting the said first member to said counterbalance arm means; said counterbalance arm means, said first member, said second member, and said intermediate means being so arranged, disposed, and interconnected as to provide for positive angular placement of said counterbalance arm means with respect to the weight of said article to be lifted and the effort imparted by said crane whereby said article is maintained in a generally stable position during the lifting operation.

3,879,078

SELF-LOCKING LIFTING MECHANISM

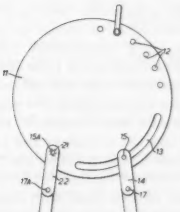
Ronald E. Turner, c/o Welding Reclamation Engineering Services Ltd., 59 Nuffield Estate, Poole, England

Filed May 14, 1974, Ser. No. 469,899

Claims priority, application United Kingdom, May 17, 1973, 23457/73

Int. Cl. B66c 1/64

U.S. Cl. 294—83 R **10 Claims**



1. A self-locking lifting mechanism comprising a main member in the form of a disc, a guide means on the disc extending generally peripherally of the disc, connection means on the

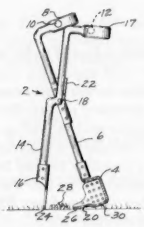
disc at a position adjacent a first end of the guide means for connecting the mechanism to a lifting device for lifting the mechanism, link means pivotally carried by the disc, the link means pivot being slidable along the guide means, a first gripping means pivotally carried at or adjacent the end of the link means which is remote from the guide means, and a second gripping means pivotally carried by the disc at a position adjacent the second end of the guide means, movement of the link means along the guide means moving the first gripping means towards or away from the second gripping means, the arrangement being such that when the lifting mechanism is fitted to an article to be lifted, the guide means extends in a direction which is inclined relative to the direction of lifting.

3,879,079

SOLID WASTE CONTAINER

William Nicholas, 1415 W. Pratt Blvd., Chicago, Ill. 60626

Filed July 17, 1972, Ser. No. 270,582
Int. Cl. A47f *13/06*
U.S. Cl. 294—118 **11 Claims**



1. A solid waste removing and carrying container comprising:

a pair of first and second elongated upright members spaced laterally from one another and pivotally connected intermediate their ends to one another to provide a scissor-like fore and aft movement with respect to one another,

said first member being a container member having an upper end container handle and an intermediate generally straight and vertically extending elongated container post and a lower container bowl having a generally vertically extending forward facing opening for receiving waste,

said bowl having a substantially flat bottom defining in part said opening to facilitate entry of the ground waste into the container,

said second member being a cover member and having an upper end cover plate handle and an intermediate generally vertically extending elongated cover post and a generally vertically and transversely extending lower cover plate releasably engageable with said bowl opening for completely encasing waste stored in said bowl with said container post being substantially laterally offset from said cover post and said cover plate being in substantially fore and aft alignment with said container bowl opening. said plate having a substantially flat edge to conform and cooperate with said bowl bottom in sweeping the waste on the ground into the container and encasing the waste, each of said posts having pivot means coupling said posts together in cross-over fashion for fore and aft independent movement of one post with respect to the other whereby in the open position said posts form an *x* shape and in the closed bowl position said posts are in generally vertical alignment with one another,

said container post being substantially laterally offset from the center of the bowl in one direction and said cover post being substantially laterally offset from the center of the cover plate in the opposite direction generally 80° from said one direction in overlapping relation of the bowl by the cover plate to provide for fore and aft closure alignment of the cover plate with said bowl, and

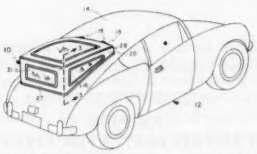
stop means on each container member and cover plate limiting the amount of fore and aft separation of the cover plate from the bowl in the open position.

3,879,080

HATCHBACK AUTOMOBILE ACCESSORY

Del Page Freeman, 738 S. Atlantic Ave., No. 806, Cocoa Beach, Fla. 32931

Filed June 7, 1973, Ser. No. 367,796
Int. Cl. B62d *33/04*
U.S. Cl. 296—24 R **4 Claims**



1. An accessory for hatchback automobiles of the type having a sloping roof and an opening therein with a hinged hatchback cover in said opening, wherein said cover includes latching means on the periphery thereof, said sutomobile further including means at a corresponding point on the periphery of said opening for engaging said latching means, comprising:

a water tight member adapted to be supported by said automobile in said opening, said water tight member adapted to secure said hatchback cover in a raised position away from said opening to expand the continuous volume of the interior of said automobile, said water tight member bridging the area between said opening and said cover;

said water tight member having a rearward window therein providing rearward, unobstructed observation by an operator of said automobile;

latching means corresponding to said automobile latching means and located adjacent a point on the periphery of said water tight member next adjacent to said automobile engaging means when said member is installed in said opening;

latch engaging means corresponding to said automobile engaging means and located adjacent a point on the periphery of said water tight member next adjacent to said automobile latching means when said member is installed in said opening;

said accessory latching means is latched to said automobile engaging means, and said automobile latching means is engaged to said accessory engaging means when said accessory is installed in said opening; and wherein

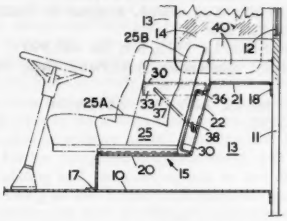
the periphery of said cover and the periphery of said opening each include a flange nestable one with the other, said member further comprising two peripheral flanges, one flange adjacent to and opposing said opening and nestable therewith, and the other flange adjacent to and opposing said cover and nestable therewith.

3,879,081

MOTOR TRUCK CAB CONVERSION TO A SLEEPER

Jack E. Hockley, and Ciro M. F. Rizzi, both of Highton, Victoria, Australia, assignors to International Harvester Company, Chicago, Ill.

Filed Sept. 17, 1973, Ser. No. 398,918
Int. Cl. B62d 27/00
U.S. Cl. 296—28 C 11 Claims



1. In a cab for a motor truck, the combination comprising, a generally horizontally disposed seat support panel means;

a generally vertically extending riser panel extending upwardly from said seat support panel means and transversely across the full width of the cab;

a shelf panel extending rearwardly and substantially horizontally from the uppermost transverse edge of said riser panel;

a generally rectangularly shaped extension panel having a transverse length substantially coextensive with said shelf panel and having a transversely extending edge pivotally connected to said riser panel adjacent the uppermost transverse edge thereof, said extension panel being swingable between a lowered, stored position wherein it lies substantially parallel to said riser panel and a raised, extended position wherein it lies substantially in the plane containing said shelf panel;

manually operable means for supporting said extension panel in its raised, extended position; and

seat assembly means mounted on said seat support panel means forwardly of said riser panel, said seat assembly means having a section thereof normally positioned so as to be horizontally spaced a distance less than the length of said extension panel measured perpendicular to the pivotal axis thereof during normal operation of the motor truck and in the path of movement of said extension panel as it is swung between its lowered, stored and raised, extended positions whereby said section of said seat assembly means precludes swinging of said extension panel from its lowered, stored position to its raised, extended position, said section of said seat assembly means being movable forwardly with respect to said riser panel to an inoperative position and out of the path of movement of said extension panel as it is swung between its lowered, stored and raised, extended positions wherein said extension panel may be freely swung to its raised, extended position from its lowered, stored position.

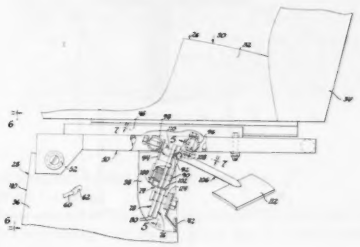
3,879,082

MOTOR VEHICLE SEAT ASSEMBLY

Edward S. Gwin, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1973, Ser. No. 419,771
Int. Cl. B60n 1/02
U.S. Cl. 296—65 R 2 Claims

1. In a motor vehicle van having a body including a pair of side walls, a roof, and a flat floor portion for cargo, a door opening formed in one of said side walls and including front and rear vertical edges and an upper horizontal edge, a pedestal having the lower end rigidly mounted on said floor portion in transverse alignment with the door opening, a driver seat carried by the upper end of said pedestal, a step located between said door opening and said driver's seat at an elevation below said floor portion for facilitating entrance into the motor vehicle van, said driver's seat comprising a seat cushion member and a seat back member that are rigidly interconnected to form a unitary structure, a transverse shaft pivotally connecting the forward end of the seat cushion member to the pedestal so as to allow the driver's seat to move between a normal seating position and a forwardly inclined position wherein the driver's seat is tilted forwardly as a unit so as to increase the horizontal distance between the driver's seat and the rear vertical edge of the door opening and allow access to the rear portion of the motor vehicle van, a spring connected between said pedestal and said seat cushion for continuously urging the driver's seat into the forwardly inclined position, a latch having a pair of lock members arranged in a scissors fashion for connecting said seat cushion to the rear portion of



the pedestal and having a closed position for locking the driver's seat in said normal seating position and an open position for allowing said spring to move the seat to the forwardly inclined position, a release member, means connecting said release member to the seat cushion member for pivotal movement about a horizontal axis, said release member having an inner end connected to said lock members for moving the latter between the open and closed positions and an outer end extending laterally outwardly beyond the side edge of said seat cushion member, and an enlarged contact member formed with the outer end of the release member and being located in an area vertically above said step and at a height which allows a person entering the motor vehicle van to engage the contact member with his knee and cause the release member to be shifted upwardly so the inner end thereof causes the lock members to be moved from the closed position to the open position.

3,879,083

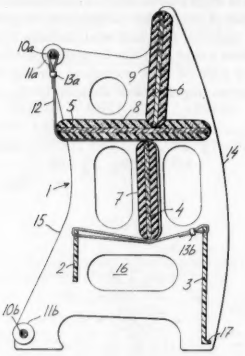
COMBINATION FURNITURE COMPRISING A ROCKING-CHAIR, A CHILDREN'S CHAIR AND A CAR FOR PLAYING PURPOSES

Gote Olsson, 290 23 Ovesholm, Sweden

Filed July 25, 1973, Ser. No. 382,325
Claims priority, application Sweden, Aug. 8, 1972, 10286/72
Int. Cl. A47c 13/00
U.S. Cl. 297—1 4 Claims

1. A combination furniture comprising a rocking-chair, a children's chair and a car for amusing purposes and including two side members each having an arcuated portion defining a rocker surface, said side members being mutually connected by means of transverse members at least some of which define seats and back-rests respectively for the various applications of the furniture, and transverse elements which constitute seats and back-rests respectively consisting of a first board which, when the furniture is in a position in which it is used as an amusement car and having said rocker surface facing upwardly, extends substantially perpendicular to the accomo-

dation plan of the car and at a distance from one end of said side members which exceeds its distance from the opposite end thereof and a second and a third board both of which extend substantially perpendicular to said first board and both extend from said first board intermediate its end but in substantially opposite directions, a belt being secured to the middle portion of a first one of said transverse elements which; still when the furniture is used as an amusement car, is located below said third board, said belt then passing the lower free end of said first board, following one side of said first board



upwardly to reach the upper surface of said second board then passing along said upper surface of said second board and then via the free end of said second board passing downardly and through a guiding means in a second one of said tranverse elements located substantially vertically below the free end of said second board in order to thereafter run in essentially the opposite direction towards the free end of a third one of said transverse elements which is located substantially vertically above the free end of said second board and said belt being connected to the last mentioned transverse element.

3,879,084

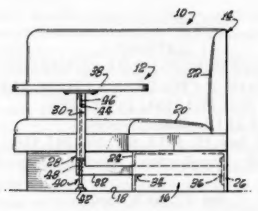
TABLE

Ferris E. Jones, 943 Millbury, LaPuente, Calif. 91746

Filed June 18, 1973, Ser. No. 371,169

Int. Cl. A47b *37/00*; F16m *11/24*

U.S. Cl. 297—174 **14 Claims**



1. A table to be attached above floor level to a supporting structure, comprising:

a supporting base including a normally upright portion, and a mounting portion extending laterally of said upright portion for attachment to said supporting structure;

a table top secured to the upper end of said upright base portion,

a pedestal mounted on said upright base portion for downward extension to a lower extended position wherein said pedestal projects below the lower end of upright portion for supporting contact with the floor and upward retraction to an elevated retracted position wherein said pedestal is disposed to clear the floor for cleaning under the table, and

means for retaining said pedestal in its lower extended position.

3,879,085

HAIRDRESSER'S CHAIR

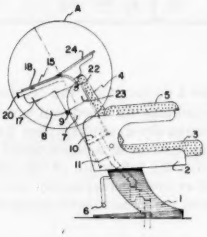
Andre Morel, Pully, Switzerland, assignor to Sodifac S.A., Lausanne, Switzerland

Filed Dec. 12, 1973, Ser. No. 423,990

Claims priority, application Switzerland, Sept. 20, 1973, 13547/73

Int. Cl. A47c *7/62*; A47k *1/04*

U.S. Cl. 297—182 **8 Claims**



1. A hairdresser's chair comprising:

a. a back, a water tank arranged in said back, said water tank connected to a drain-pipe for waste water;

b. a wash-basin having a shampooing scoop pivotedly mounted thereon, said wash-basin located in said water tank and adapted to be moved out of said water tank in positions of use for resting against a part of the water tank while the shampooing scoop rests against the chair back; and

c. means for slidably mounting said wash-basin in said water tank whereby said sliding motion of the wash-basin adjusts the rest position of the wash-basin against said part of the water-tank and the rest position of said shampooing scoop against said back.

3,879,086

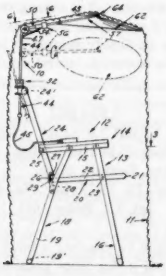
FOLDABLE SUNSHADE ATTACHMENT FOR A CHAIR

Francesco Moceri, 733 Lantz, West, Detroit, Mich. 48203

Filed Sept. 21, 1973, Ser. No. 399,384

Int. Cl. A47c *7/66*

U.S. Cl. 297—184 **9 Claims**



1. A shade or like attachment for an article of furniture having a horizontally extending cross part, comprising a col-

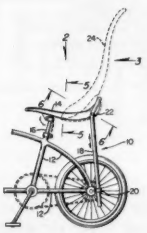
umn unit supporting a shade or like member at an upper end of said unit, said unit including an elongated rod component, bracket means for rigidly but releasably attaching said column unit in a vertically extending relation of its said rod component to and above said cross part, and means including a clamp device providing for adjustments of the position of said unit's rod component longitudinally in the direction of its length and angularly about its own axis, said device including a sleeve unit telescoped on said rod component and rotatable about the axis thereof in a vertically spaced relation to said part, said sleeve unit comprising a rotatable annular clamp element having an external surface eccentric of said axis which, upon rotation of the sleeve unit and element about the axis, radially and externally engages against a portion of said furniture cross part and frictionally but releasably clamps said rod component in the latter's said longitudinally or angularly adjusted position relative to said cross part, said column unit having a further elongated rod component, and means pivotally articulating said rod components to one another for an adjusting swing of said further elongated rod component in a plane including the axes of both of said components.

3,879,087

CYCLE SEAT BACKREST

Gerard Russo, 2509 Gardi St., Duarte, Calif. 91010

Filed Oct. 12, 1973, Ser. No. 405,816
Int. Cl. A47c *7/42*
U.S. Cl. 297—195 **8 Claims**



1. In a backrest for use with a saddle-like seat for a cycle, such as a bicycle or motorcycle, said seat having a top face of a shape upon which a rider may be seated with legs of the rider straddling the forward end thereof, said face being symmetrical with respect to its central longitudinal axis, said seat having a downwardly turned flange at opposite sides thereof, comprising:

a. said backrest having a lower edge adapted to rest on said top face at a locus forwardly from the rear end of the seat and transverse to said longitudinal axis to provide a fulcrum;

b. a pair of downwardly extending side hooks secured to a lower portion of the backrest, one at each side of said axis, each side hook adapted to engage beneath a corresponding flange at the sides of the seat and at a locus forwardly from said lower edge, whereby a rearward force on the backrest produces a moment about said fulcrum which is resisted by upward forces applied by said hooks to the flanges; and

c. other means affixed to the backrest for securing it to the seat at a locus rearwardly of said fulcrum and so constructed to resist a moment about said fulcrum produced by a forward force applied to the backrest, said other means also preventing forward movement of the backrest relative to the seat;

d. the position of said fulcrum being sufficiently near the rear end of the seat to permit the rider to be seated directly thereon in substantially the same position as in the absence of the backrest, whereby the seat serves its original purpose and the backrest serves its added purpose;

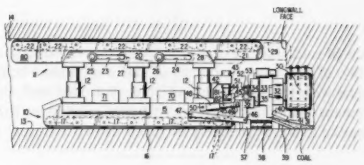
e. said side hooks being spaced in such manner that they engage beneath the corresponding flanges when the backrest is slid forwardly onto the seat to the position where said lower edge forms said fulcrum.

3,879,088

LONGWALL MINING SYSTEM

George Sodder, Jr., 607 Fourth Ave., Montgomery, W. Va. 25136; Samuel Eugene Fish, 189 Hillside Ave., Boomer, W. Va. 25031, and Oliver Ellsworth Palmer, 315 E. Ward St., Cedar Grove, W. Va. 25039

Filed Sept. 13, 1973, Ser. No. 397,010
Int. Cl. E21c *29/00*; **E21d** *23/00*
U.S. Cl. 299—31 **13 Claims**



1. A longwall mining device comprising:

a lower frame;

at least one set of power driven tracks, on said lower frame, for advancing said frame along the floor of a mine in a forward direction;

an upper frame;

adjustable jack means supporting said upper frame on said lower frame and adapted to raise said upper frame substantially vertically toward the roof of the mine;

a top frame mounted on said upper frame for forward and rearward horizontal movement thereon, said top frame having at least one set of power driven tracks thereon engageable with the roof of the mine and operable to advance said top frame forwardly along said upper frame while in engagement with the roof of the mine;

guide means carried by and extending laterally across the front of said lower frame and a mineral cutting device movable along said guide means; and

conveyor means carried by and extending laterally across the front of said lower frame.

3,879,089

BICYCLE WHEEL ORNAMENT

Allan C. Stults, 424 Prospect St., Newport Beach, Calif. 92660; Raymond H. Powell, 11871 Simon Ranch Rd., Santa Ana, Calif. 92705, and Edward D. O'Brian, 910 Iroquois Ave., Anaheim, Calif. 92801

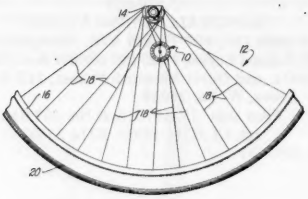
Filed Apr. 22, 1974, Ser. No. 462,641
Int. Cl. B60r *13/00*
U.S. Cl. 301—37 SA **8 Claims**

1. An ornamental body which is primarily intended to be located on a bicycle wheel between two spokes of such a wheel which cross one another at an angle and which are spaced from one another where they cross, said body comprising:

a generally flat body of a self-supporting material having a peripheral edge and opposed sides, said sides being sufficiently close to one another so that said body is capable of being inserted between said spokes where said spokes cross one another,

a plurality of cam means for applying forces to distend said spokes away from one another when said body is inserted between said spokes where said spokes cross one another and when said body is thereafter twisted a first amount, for at least partially releasing the forces causing distention of said spokes upon said body being twisted a further

amount and for holding said body in position relative to said spokes through engagement between said spokes and said body upon such release,



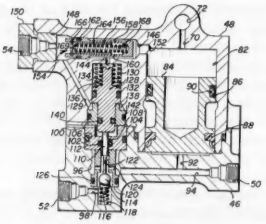
each of said sides of said body being provided with at least two of said cam means, all of said cam means being integral with the sides upon which they are located, said cam means on each of said sides being located so that each spoke is simultaneously engaged at two different points.

3,879,090

HYDRAULIC SKID CONTROL VALVE

Lloyd H. Holmes, Salt Lake City, Utah, assignor to E-Systems, Incorporated, Dallas, Tex.

Filed Feb. 13, 1974, Ser. No. 442,171
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **22 Claims**



1. A hydraulic valve for coupling to a primary fluid source and a secondary fluid source, comprising in combination:

a housing including a changeover cavity;

a pressure responsive actuator means in the changeover cavity separating primary and secondary portions thereof;

means defining a primary flow cavity, said primary flow cavity having an input channel and an output channel, said primary portion of said changeover cavity being connected to said primary output channel, said primary input channel being arranged for connection to the primary fluid source;

means defining a secondary flow cavity, said secondary flow cavity having an input channel and a return channel, said secondary input channel being connected to said secondary portion of said changeover cavity, said secondary return channel being arranged for connection to the secondary fluid source;

an oscillator valve in said secondary flow cavity for alternately connecting and disconnecting said secondary portion of said changeover cavity to said secondary return channel;

control means connecting said secondary fluid source with said secondary portion of said changeover cavity, said control means being responsive to the pressure within said secondary portion of said changeover cavity for controlling the flow of said secondary fluid thereto, said pressure responsive actuator being movable within said changeover cavity to vary the respective volumes of said primary and secondary portions in responsive to the secondary fluid pressure bearing thereon; and

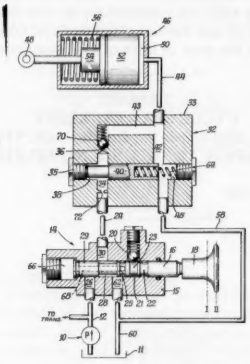
a control valve in the primary flow cavity for controlling the flow of fluid from the primary fluid source to the output channel.

3,879,091

PARKING BRAKE CONTROL SYSTEM

John W. Bridwell, and Norman J. Hodge, both or Peoria, Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Jan. 21, 1974, Ser. No. 435,113
Int. Cl. B60t *15/16*
U.S. Cl. 303—71 **19 Claims**



1. A fluid control system for controlling flow of pressure fluid from a source of fluid under pressure to an automatically actuated pressure released brake including; actuator valve means, first fluid communication means for communicating said source with said actuator valve means, control valve means, second fluid communication means for communicating said control valve means with said actuator valve means, third fluid communication means for communicating said control valve means with said brake for actuation thereof, said actuator valve means including bore means and including actuator means disposed in a portion of said bore means for selectively communicating portions of said first and second fluid communication means to selectively communicate pressure fluid from said source to said control valve means, said control valve means including passage means and spool means disposed within a portion of said passage means for selectively communicating portions of said second and third fluid communication means for communicating fluid to and from said pressure released brake for respective disengagement and engagement thereof, check valve means disposed within said passage means between said second fluid communication means and said third fluid communication means for permitting fluid flow past said check valve means only from said second to said third fluid communication means.

3,879,092

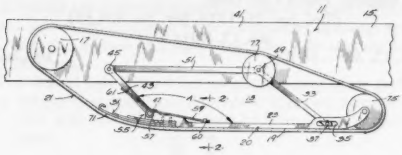
SNOWMOBILE TRACK SUSPENSION SYSTEM

Edgar Rose, Glencoe, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 19, 1973, Ser. No. 426,238
Int. Cl. B62d *55/14*
U.S. Cl. 305—24 **15 Claims**

1. A track suspension comprising a chassis, a track suspension assembly including a suspension frame member, a resil-

ient member extending forwardly from said frame member from adjacent the forward end thereof, link means connecting said frame member to said chassis for movement of said frame



member relative to said chassis, means biasing said suspension assembly for movement of said frame member away from said chassis, and a track supported, in part, by said track suspension assembly in engagement with said resilient member.

3,879,093

AXIAL GUIDING APPARATUS

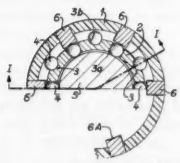
Claude Betrix, Rue Rugin 23, 2034 Peseux, Switzerland

Filed June 18, 1973, Ser. No. 370,727

Claims priority, application Switzerland, June 20, 1972, 9245/72

Int. Cl. F16c *29/06*

U.S. Cl. 308—6 C **1 Claim**



1. Apparatus for guiding axial displacement of a cylindrical member, the apparatus comprising a bush, several series of bearing means for guiding the member in the bush, each series forming a closed circuit and comprising a rectilinear row of balls in rolling contact with the cylindrical member; cage means located in the bush for guiding the several series of bearing means in guide races and having, for each series of bearing means and for allowing the balls of the respective rectilinear row to roll, a rectilinear slot in the cage means, a groove parallel to the slot and defined by the outer side of the cage means and two incurved ramps connecting the corresponding ends of the slot and groove; the cage means being constituted by a tubular socket with a solid wall in which the slots and grooves are provided; the bush being tubular and cylindrical and being constituted by a hard material and in which are embedded means, projecting inside the bush, for providing said races for the balls in rolling contact with the guided member, and said races being curved with respect to the rolling axis of the balls in order to be able to adjust the clearance of the balls by rotating the tubular socket.

3,879,094

RADIAL BEARINGS

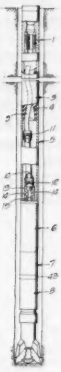
John E. Tschirky, and Gary Monroe Crase, both of Long Beach, Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 15, 1973, Ser. No. 388,586

Int. Cl. E21c *13/04*

U.S. Cl. 308—230 **27 Claims**

1. In a fluid motor assembly including a motor, a drive shaft, and a housing for said drive shaft, a radial bearing between said drive shaft and said housing, said radial bearing comprising a housing member and a shaft member, a tungsten carbide sleeve mounted on one of said members and a tungsten carbide complementary bearing mounted on the other of said



members in rubbing relationship to said bearing member, fluid passageways through said bearing.

3,879,095

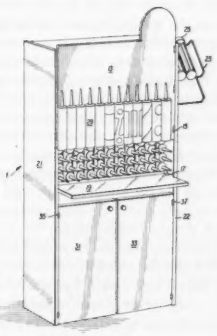
DISPLAY AND DISPENSING CABINET

James S. Seamans, 837 Harrison Ave., Scranton, Pa. 18510; John A. Neuman, Box 288, Waverly, Pa. 18471, and Malcom C. MacKinnon, 115 Old Orchard Rd., Clarks Green, Pa. 18411

Filed Apr. 10, 1972, Ser. No. 242,685

Int. Cl. A47f *3/02*

U.S. Cl. 312—45 **2 Claims**



1. An upright self-service display floor cabinet for housing and dispensing elongated cartridges comprising a upper dispensing portion with a plurality of inner chutes for stacking and dispensing columns of horizontally extending cartridges by gravity feed,

an outer display door being hinged on substantially vertical pivot means located to one side of said dispensing portion to permit access to said chutes, a plurality of indicia cartridges, said door having a plurality of harness holders on the outer surface thereof releaseably holding said individual indicia cartridges in visual exposed vertical positions and said holders corresponding in number and location to indicate the contents of said inner chutes when said display door is closed, said door extending to

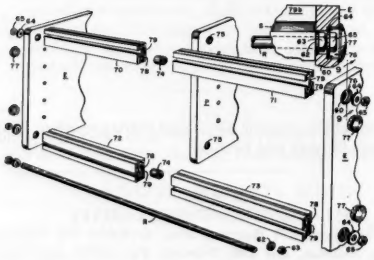
substantially cover said upper dispensing portion, but terminating short of the bottom of the dispensing portion leaving same opened and the lowermost cartridges in said chutes exposed for ready removal, said cabinet being supported on a lower shelf portion which rests on the floor and said shelf portion having access door means.

3,879,096

CABINET SYSTEMS WITH TENSION RODS AS FRAME MEMBERS

Leif Blodee, Holland, Mich., assignor to E. H. Sheldon and Company, Muskegon, Mich.

Filed Mar. 6, 1973, Ser. No. 338,548
Int. Cl. A47b 47/00, 43/00
U.S. Cl. 312—265 3 Claims



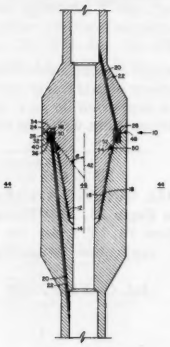
1. A cabinet unit having a plurality of compartments comprising: a plurality of tension rod/frame assemblies, one such assembly located in each corner of said unit and extending transversely across the width thereof, each assembly including a metal stretcher channel forming a conduit extending the width of each compartment, all of said conduits for each assembly being horizontally aligned, each assembly further including a continuous metal rod received in said aligned conduits, each of said stretcher channels comprising an elongated metal member having a plurality of inteconnected thin metal walls including a first horizontal wall, a second horizontal wall spaced beneath said first horizontal wall, and first and second vertical wall means integral with said first and second horizontal walls to define said conduit receiving an associated tension rod; each conduit being larger in area than the cross section of a rod received therein and each stretcher including spacer means within said conduit for holding said stretcher channel against lateral movement relative to a rod on whhich it is assembled; a separator panel separating each adjacent pair of compartments and interposed between all four pairs of adjacent channels; a pair of exterior side panels, each of said separator and exterior panels defining corner holes aligned with the conduit of an associated tension rod/frame assembly; end fastener means holding the ends of each continuous rod in tension against the outboard ends of said aligned stretcher channels, said stretcher channels being dimensioned to extend beyond said associated corner holes of said separator panels and providing end portions biting into the separator panels engageed thereby and holding an associated separator panel in vertical alignment while resisting twisting of said channels; a door assembly including upper and lower hinge means secured respectively to the stretcher channels associated with said upper and lower front tension rod/frame assemblies; a door hingedly connected to said hinge means; and a bottom panel for each compartment carried by the lower rear and front tension rod/frame assemblies.

3,879,097

ELECTRICAL CONNECTORS FOR TELEMETERING DRILL STRINGS

Don H. Oertle, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jan. 25, 1974, Ser. No. 436,551
Int. Cl. H01r 3/04
U.S. Cl. 339—16 R 10 Claims



1. In a telemetering drill string in which segments of an insulated electrical conductor are joined by electrical connectors in mating portions of drill string pipe joints that contain mating shoulders, an improvement in the arrangement of electrical connectors comprising:

a. in each drill string pipe joint, said joints comprising the union of a male and a female threaded member, positioning in each of said joints a first and a second ring-shaped substantially full-circle contact-making ring, said first ring being positioned in said male member in a groove between said shoulder and the threaded portion of said member, said second ring being positioned in said female member in a cavity between said shoulder and the threaded portion of said member, each of said rings being in electrical contact with a segment of said insulated electrical conductor, electrically insulated from the member in which it is positioned and having a contact surface forming an angle from 15° to 65° with the longitudinal axis of said drill string;

b. a first and second sealing means positioned in each drill string pipe joint to sealingly separate said rings from fluids inside and outside said drill string, said first sealing means being positioned between said rings and the outer diameter of said drill string pipe and said second sealing means being positioned between said rings and the threaded portion of said joint; and,

c. resilient biasing means operatively associated with at least one of said rings to urge said ring toward a position from which it is displaced by the adjacent contact-making ring as the members are screwed together.

3,879,098

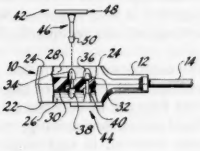
CONNECTOR WITH SAFETY CLOSURE

George J. Lawrence, North Kingstown, and Robert L. Martin, Cranston, both of R.I., assignors to General Electric Company, New York, N.Y.

Filed Nov. 8, 1973, Ser. No. 413,800
Int. Cl. H01r 13/44, 13/48, 13/52
U.S. Cl. 339—41 9 Claims

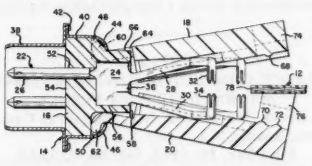
1. An electrical connector which comprises:

a. a resilient insulating body,
b. a pair of electrical contacts in said insulating body,
c. said contacts being spaced apart and positioned in said body beneath an exterior surface thereof,
d. means for conducting electric current to said contacts,
e. a pair of spaced power blade ports having openings at said exterior surface and communicating with said electrical contacts,
f. a central port located between said power blade ports,
g. said central port having an opening at said exterior surface and extending into said body to a predetermined depth,



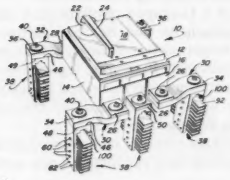
h. an insulating closure element having a generally disc-shaped head and an elongated shank depending from the center of said head,
i. said shank extending into said central port and the underside of said head bearing against said external surface,
j. a pair of spaced blade openings in said head conforming generally to those in said body,
k. said closure element being rotatable to bring the pairs of blade openings selectively into alignment or out of alignment.

3,879,099
FLAT FEXIBLE CABLE CONNECTOR ASSEMBLY INCLUDING INSULATION PIERCING CONTACTS
Howard Richard Shaffer, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 4, 1973, Ser. No. 394,362
Int. Cl. H01r *11/20, 13/58*
U.S. Cl. 339—99 R **20 Claims**



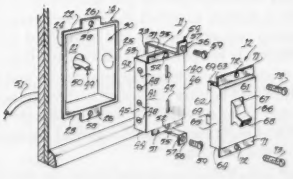
8. A connector assembly for terminating flat flexible cable having a plurality of insulated conductors comprising:
a contact block having a plurality of through passages therein,
a like plurality of contacts each positioned in a respective one of said passages, each said contact including a planar body portion, an electrical connection terminal extending from one side of said body portion, a pair of cantilever arms extending from another side of said body portion and lying substantially in the plane thereof, a forked projection at the free end of each said arm, each said forked projection including at least two tines defining a plane, said forked projections being directed towards one another with their respective planes intersecting by being angularly offset with respect to each other and the plane of said body portion,
and a pair of mating housing members pivotally attached to said contact block and adapted to act against said arms to bring said projections into interdigitated engagement with conductors of said flat flexible cable entrapped and engaged by said tines.

3,879,100
CIRCUIT BREAKER TERMINAL CONNECTOR, AND HEAT DISSIPATOR ASSEMBLY
Ferdinand E. Chabot, Cedar Rapids, Iowa
Filed July 7, 1972, Ser. No. 269,602
Int. Cl. H01r *13/66*
U.S. Cl. 339—112 R **5 Claims**



1. A three-pole electrical circuit breaker comprising:
a. a molded casing having a pair of opposite wall portions;
b. three terminal straps, one for a center pole and one for each of two outer poles of the circuit breaker, projecting outwardly of the casing and respectively having outer end portions disposed adjacent one of the opposite wall portions;
c. three terminal straps, one for the center pole and one for each of the two outer poles of the circuit breaker, projecting outwardly of the casing and respectively having outer end portions disposed adjacent an other of the opposite wall portions; and
d. six circuit breaker terminal connector and heat dissipator assemblies electrically and mechanically connected respectively to the outer end portions of the terminal straps, each of said assemblies including an electrically conductive generally U-shaped member having a bight portion connected to its respective terminal strap and a pair of spaced leg portions, a plurality of heat dissipator plates mounted between the leg-portions in spaced relationship to each other and in heat conductive relationship with the leg portions, and electrical cable connecting means secured to the generally U-shaped member on an outer side of one of the leg portions.

3,879,101
ELECTRIC PLUG-IN MODULE
George T. McKissic, 424 New St., Spring City, Pa. 19475
Filed Dec. 4, 1973, Ser. No. 421,587
Int. Cl. H01r *13/60*
U.S. Cl. 339—122 R **1 Claim**



1. An electrical wiring system intended for use with a conventional type of electrical wiring box adapted to be mounted

in a vertical surface, such as a wall and the like, and having a compartment defined interiorly thereof and opening out of the front thereof, the system comprising, in combination:

an electrical receptacle device adapted to be mounted interiorly of said box compartment;

said receptacle having a flat vertical front surface, a flat vertical back surface, opposed top and bottom end surfaces, and opposed parallel side wall surfaces;

a pair of spaced apart vertically extending flanges each associated with a top and bottom edge of said receptacle and projecting vertically outwardly therefrom and extending transversely thereacross;

an opening disposed centrally of each of said receptacle flanges and extending therethrough;

a bracket of a U-shaped configuration adapted to mount said receptacle in said box compartment, said bracket having a bright portion defining a base member, a pair of parallel outwardly extending leg members, and a pair of spaced apart oppositely directed flange members formed integrally with the free ends of the leg members and projecting vertically therefrom;

said bracket base member being mounted along the vertical central axis of said receptacle back surface and affixed thereto;

said bracket leg members each projecting forwardly from said base member to a position disposed forwardly of said receptacle device front surface and spaced vertically apart a distance greater than the exterior edges of said flange members of said receptacle device;

said terminal flange members associated with each leg member having an opening disposed centrally thereof and extending therethrough, each of the openings adapted to be placed in axial alignment with associated mounting openings in said electrical box;

a pair of screws having threaded shanks, each screw associated with one of said leg member flange members adapted to pass through said opening associated therewith and be threadedly received in said associated mounting openings of said electrical box to secure said receptacle device to said electrical box inwardly of said box compartment;

four electrical sockets disposed in said front surface of said receptacle device and projecting thereinto, said sockets each being of an identical elongated rectangular configuration disposed in two vertical rows of two sockets each with the pair of sockets of each row being disposed in transverse alignment with the pair of sockets of the other row;

a pair of independent terminal connectors mounted on the top surface of said receptacle device, each terminal connector electrically connected to the topmost adjacent ones of said sockets to be in electrical communication therewith;

a second pair of terminal connectors mounted on said bottom surface of said receptacle device with each independently connected to one of the adjacentmost sockets to be in electrical communication therewith;

a first breakable jumper means electrically interconnecting said first pair of terminal connectors and disposed exteriorly of said receptacle device and adapted to be manually broken in a manner to effect the electrical separation of said terminal connectors and said associated sockets;

a second breakable jumper means electrically interconnecting said second pair of terminal connectors and disposed exteriorly of said bottom surface of said receptacle device and adapted to be manually broken in a manner to effect the electrical separation of said terminal connectors and said associated sockets;

an electrical switch device adapted to be mounted on said receptacle device;

said electrical switch device consisting of a front surface, a vertical flat back surface, opposed vertical side wall surfaces, and opposed top and bottom horizontal surfaces;

a toggle switch actuating means disposed inwardly of said switch device and having its handle portion projecting outwardly of said switch device face surface for manual actuation thereof exteriorly of said switch device;

a pair of parallel spaced apart oppositely projecting flange members, each flange member associated with the top and bottom surfaces of said switch device and projecting outwardly therefrom in opposite directions;

an aperture disposed centrally of each of said switch device flange members and extending therethrough;

said switch device flange members adapted to overlie in a parallel manner said receptacle device flange members when said switch device is mounted on said receptacle device with said apertures of said switch device flange members disposed in axial alignment with associated ones of said apertures of said receptacle device flange members;

a pair of screws each having a threaded shank, each of said screws associated with one set of aligned flange member apertures and adapted to be passed through the central opening of said switch device flange member opening and be threadedly received in said aligned opening of said receptacle device flange member to removably retain said switch device mounted on said receptacle device;

four independent electrical conducting plug members of an identical flat elongated rectangular configuration affixed to said back surface of said switch device and projecting outwardly therefrom in spaced apart relationship to each other, said plugs being of a size, configuration and spacing corresponding to the size, configuration and spacing of said sockets in said receptacle device;

said plugs adapted to be oriented relative to said receptacle sockets with said plugs being engaged in said sockets and making electrical contact therewith when said switch device is mounted on said receptacle device with said plug members engaged in said socket;

said plug members being electrically connected inwardly of said switch device to switching mechanisms for making and breaking electrical contact between said plug members;

whereby a single switch device may be used both as a conventional single switch, a three-way switch, and a four-way switch merely by selective wiring of the terminal connectors of the receptacle device and the manual breaking away of said first and second jumper means depending upon the intended usage of the switch device in the electrical circuit to be controlled thereby.

3,879,102

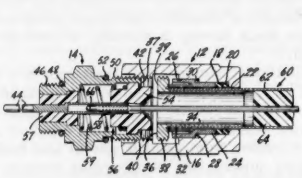
ENTRANCE CONNECTOR HAVING A FLOATING INTERNAL SUPPORT SLEEVE

Martin S. Horak, Morganville, N.J., assignor to Gamco Industries, Inc., Roselle, N.J.

Filed Dec. 10, 1973, Ser. No. 423,063

Int. Cl. H01r *17/04, 13/46*

U.S. Cl. 339—143 R **11 Claims**



1. A coaxial entrance connector comprising:

a. a pin section adapted to contact the internal conductor of a coaxial cable comprising:

i. spring-loaded conductive jaws adapted to close upon and frictionally engage the internal conductor; and

ii. jaw actuating means within said pin section for closing said jaws upon said internal conductor; and

b. a nut section joined to said pin section to make electrical contact with the outer jacket of a coaxial cable comprising:

i. a body;

ii. a cavity internal to said body;

iii. a substantially tubular first opening at one end of said body extending into said cavity through which a coaxial cable can be passed;

iv. a substantially tubular second opening into said body having internal threads therein which coact with external threads on said pin section to join the pin section to the nut section;

v. a compressible ferrule within said cavity adapted to be clamped onto the outer conductive jacket of a coaxial cable and to make electrical contact with said outer conductive jacket;

vi. a substantially cylindrical support sleeve extending from said cavity through said compressible ferrule and into said first opening;

vii. means for clamping said compressible ferrule onto the outer jacket of a coaxial cable inserted through said first opening into said cavity and onto said support sleeve, whereby the outer jacket of the cable will be sandwiched between said compressible ferrule and said support sleeve; and

viii. a washer-like section on the end of said support sleeve within said cavity having external threads thereon adapted to be screwed through said internal threads of said second opening for preventing said support sleeve from sliding out of said cavity through said first opening while allowing for free rotation of said support sleeve.

3,879,103

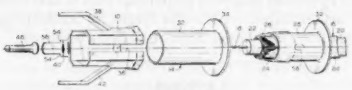
COAXIAL CABLE CONNECTOR FOR CIRCUIT BOARD

Ronald W. Peltola, Beaverton, and Richard F. Guarnero, Lake Oswego, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Division of Ser. No. 95,627, Dec. 7, 1970, Pat. No. 3,742,425. This application Mar. 19, 1973, Ser. No. 342,554

Int. Cl. H05k *1/02*

U.S. Cl. 339—177 R **1 Claim**



1. A coaxial cable connector for terminating an end of a coaxial cable having an inner conductor surrounded by a sheath of insulation with an exposed section extending outwardly from the insulation and an outer conductor surrounded by a sheath of insulation with an exposed section of the outer conductor extending outwardly from the sheath of insulation, comprising:

a first ferrule means positioned on the sheath of insulation surrounding the outer conductor and a second ferrule means telescopically positioned on said first ferrule means, both of said ferrule means electrically connected by capturing the exposed section of the outer conductor therebetween, whereby both of said ferrule means and the inner conductor so assembled define a plug means;

a first connector means resiliently connected only to the exposed section of the inner conductor thereby terminating the inner conductor and a second connector means resiliently connected to the second ferrule means thereby terminating only the outer conductor, whereby both of said connector means are independently connected to the coaxial cable and so assembled define a socket means mated to said plug means to terminate the end of the coaxial cable.

3,879,104

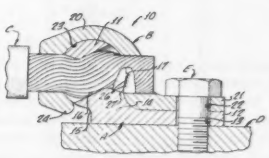
LOCKABLE SOLDERLESS ELECTRICAL CONNECTOR

Alvin E. Shugarman, Santa Ana; Lynn E. Shugarman, Costa Mesa, and Lowell E. Linder, Santa Ana, all of Calif., assignors to Gamm-Tech Inc., Santa Ana, Calif.

Filed Apr. 26, 1973, Ser. No. 354,646

Int. Cl. H01r *9/10*

U.S. Cl. 339—266 R **8 Claims**



1. In a solderless electrical connector of the rotatable jaw, clamping type comprising male and female jaws having respective mounting tails, said male jaw including a transverse cylindrical head joined to one end of said male jaw tail and having a bore which extends diametrically through the center of said head for receipt of conductor, said female jaw including a C-shaped yoke joined to one end of said female jaw tail and defining a transverse cylindrical socket which receives said head of said male jaw for relative angular movement of said jaws between an open, conductor-receiving position and a closed, conductor-clamping position, said yoke having cylindrical bores on a common diameter of said yoke which are alignable with said bore in said male jaw in said open position of said jaws, the improvement wherein one of said jaws includes a transverse locking rib and the other of said jaws includes a plurality of mating transverse notches positioned so that different ones of said notches receive said locking rib in different relative positions of said jaws between said open and closed positions and wherein the notch engaged by said rib when said jaws are in said closed position is slightly larger than the remainder of said notches.

3,879,105

TELESCOPE WITH AN IMAGE REVERSING SYSTEM

Werner Broche; Albert Ignatius, both of Jena; Günter Brand, Schalkau; Adolf Stirzel, Hildburghausen/Haselrieth, and Wilhelm Storch, Eisfeld, all of Germany, assignors to Jenoptik Jena G.m.b.H, Jena, Germany

Filed Apr. 4, 1974, Ser. No. 457,034

Int. Cl. G02b *23/02*

U.S. Cl. 350—51 **4 Claims**

1. A telescope comprising in a housing

an ocular,

an objective

an image reversing system, arranged between said ocular and said objective,

said ocular and said objective having in common an image plane and a folded optical axis,

said image reversing system comprising two right angle prisms and being in optical alignment with said ocular and said objective,

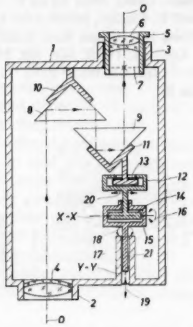
at least one of said prisms being adjustably mounted on said housing,

a prism mount for receiving said adjustable prism,

a slide, being rigidly connected to said prism mount,

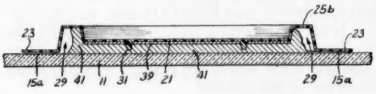
a guide being arranged at right angles relative to the part of the optical axis which is in the vicinity of said ocular,

said slide being displaceable in said guide,
a seating body being fast with said guide,
a seating, said seating body being tiltably seated in said seating about an axis of rotation being in parallel with said guide,



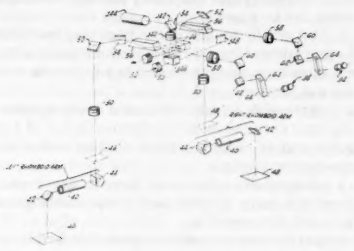
a trunnion being secured to said seating at right angles to said axis of rotation,
a sliding bearing being connected to said housing,
said trunnion being rotatably and displaceably arranged in said sliding bearing.

3,879,106
MICROSCOPE SLIDE COVER SLIP
James B. McCormick, Hinsdale, Ill., assignor to Pelam, Inc., Hinsdale, Ill.
Filed Apr. 11, 1973, Ser. No. 350,080
Int. Cl. G02b *21/34*
U.S. Cl. 350—95 **2 Claims**



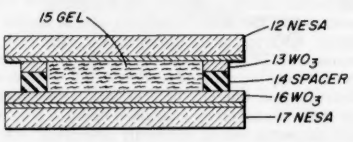
1. A cover slip for a microscope slide, comprising: a transparent panel; a flange projecting from the periphery of said panel adapted to overlie the surface of a microscope slide with said panel being in spaced relation to the slide surface, said panel being capable of selective flexing toward said slide surface when said flange is secured on said slide surface; means for securing said flange to the surface of the slide; means intermediate said panel and said flange defining an overflow chamber peripherally of said panel; and a post extending perpendicularly from the surface of said panel to have its free end adjacent but spaced from the slide surface when said panel is in a normal unflexed position on the slide surface, said post having a predetermined longitudinal length such that said panel may be flexed toward said slide surface to cause said free end of said post to engage said slide surface and establish a predetermined thickness for a specimen disposed on said slide surface in underlying relation to said panel, said panel being substantially planar and said overflow chamber being defined by a wall extending around the periphery of said panel, said wall being comprised of a first wall member extending generally perpendicularly upward from the periphery of said panel, a second wall member extending from the uppermost portion of said first wall member generally parallel to the surface of said panel and a third wall member joining said second wall member to said flange.

3,879,107
MICROSTEREOSCOPE
Richard J. Chaban, Northridge, Calif., assignor to McBain Instruments, Inc., Chatsworth, Calif.
Filed Sept. 4, 1973, Ser. No. 394,243
Int. Cl. G02b *27/24, 21/22*
U.S. Cl. 350—138 **5 Claims**



1. In a photointerpretation stereoscope, the combination of:
a housing;
a pair of rhomboid arms mounted at the bottom of said housing;
a pair of zoom lenses each mounted in a respective rhomboid arm for magnifying one of a pair of image separations positioned in an object plane below the arm;
means in each arm for causing the magnified image from the zoom lens therein to be directed to an image plane above the arm,
the light directed upwardly from said arms being along parallel lines;
parallel image rotators;
respective means above each image plane for transferring each magnified image from the image plane to one of said image rotators;
support means for each transfer means;
means operable from the exterior of said housing for vertically positioning each rhomboid arm and associated support means;
means operable from the exterior of said housing for independently rotatable positioning each rhomboid arm above the object plane;
a pair of eyepieces mounted on parallel axes in said housing;
and further respective transfer means for transferring the images from said image rotator to said eyepieces.

3,879,108
ELECTROCHROMIC DEVICES
Donald Joseph Berets, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Continuation of Ser. No. 211,857, Dec. 23, 1971, abandoned, which is a continuation of Ser. No. 41,153, May 25, 1970, abandoned. This application May 18, 1973, Ser. No. 361,760
Int. Cl. G02f *1/36*
U.S. Cl. 350—160 R **9 Claims**

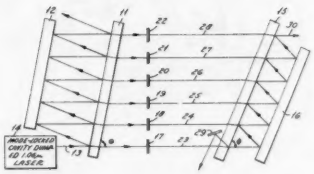


1. A variable light transmission device which comprises a persistent electrochromic material as a light modulating material, and a pair of electrodes for providing electric current to said material, wherein a persistent electrochromic material is used, as the counterelectrode.

3,879,109
LASER WAVEFORM GENERATOR

Carlton F. Thomas, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed June 21, 1973, Ser. No. 371,882
Int. Cl. G02f 1/16
U.S. Cl. 350—160 R 11 Claims



1. In combination with a source of electromagnetic energy which provides an incident beam along a beam axis, an electromagnetic energy pulse shaper comprising,

first beamsplitting means having a surface disposed to intersect said beam axis at a first angle with respect thereto, a beam incident upon said surface of said first beamsplitting means along said axis being partially transmitted through said first beamsplitting means and partially reflected,

first reflective means disposed in proximity to said surface of said first beamsplitting means in position to intersect beams reflected from said surface of said first beamsplitting means, said first reflective means being separated from said surface by a first distance, a beam incident upon said first reflective means being reflected back onto said surface of said first beamsplitting means to be partially transmitted through said first beamsplitting means and partially reflected, said partial transmission and partial reflection of said first beamsplitting means and said reflection of said first reflective means splitting said beam incident along said beam axis into at least a first split beam transmitted through said first beamsplitting means from said incident beam and a second split beam transmitted through said first beamsplitting means after having been at least once reflected at said surface of said first beamsplitting means and by said first reflective means, said first and second split beams being separated in time by an amount proportional to said first distance,

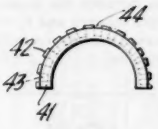
second beamsplitting means having a surface disposed to lie in the path of beams transmitted through said first beamsplitting means at a second angle with respect to said beam axis, said first and second split beams being partially transmitted through and partically reflected from said surface of said second beamsplitting means, and

second reflective means disposed in proximity to said second beamsplitting means in position to intercept beams transmitted therethrough, said second reflective means being separated from said second beamsplitting means by a second distance which is unequal to said first distance, a beam incident upon said second reflective means being reflected back onto said second beamsplitting means, the reflection between said second reflective means and said second beamsplitting means combining said first and second split beams transmitted through said second beamsplitting means into a composite beam in which said first and second split beams are separated in time by an amount proportional to the difference between said first and second distances.

3,879,110
SMALL FLY'S EYE LENS ARRAY

Motoaki Furukawa, Tokyo, Japan, assignor to Nippon Selfoc Company Limited, Tokyo, Japan

Filed Aug. 15, 1973, Ser. No. 388,559
Claims priority, application Japan, Aug. 22, 1972, 47-84284
Int. Cl. G02b 3/00
U.S. Cl. 350—167 3 Claims

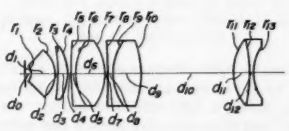


1. A fly's eye lens array includes a unitary transparent substrate having first and second mutually parallel curved surfaces, a plurality of elongated regions formed within said substrate, each of said regions having a higher refractive index than the areas of said substrate surrounding said regions, each of said regions extending into said substrate from said first surface toward said second surface along a central axis which is substantially perpendicular to said first surface, the refractive index of each of said regions being highest along said central axis and decreasing in a direction extending perpendicularly outward from said central axis.

3,879,111
MICROSCOPE OBJECTIVE

Atsuo Goto, Tokyo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1974, Ser. No. 439,756
Claims priority, application Japan, Feb. 10, 1973, 48-16875
Int. Cl. G02b 9/60, 21/02
U.S. Cl. 350—216 1 Claim



1. A microscope objective comprising eight lenses arranged in five components successively, the first component being a negative meniscus lens with a forwardly concave front face, the second component being a positive meniscus lens with a forwardly concave front face, the third component being a biconvex doublet, the fourth component being a positive meniscus doublet with a forwardly concave front face, and the fifth component being a negative meniscus doublet with a forwardly convex front face, and constructed according to the constructional data given herebelow:

f=5.066	NA=0.65	β=40X		
		d_0= 0.717		
r_1=	−2.166	d_1= 3.92	n_1=1.77370	ν_1=49.4
r_2=	−3.77	d_2= 0.25		
r_3=	−28.341	d_3= 1.68	n_2=1.48656	ν_2=84.5
		d_4= 0.28		
r_5=	56.4	d_5= 0.88	n_3=1.57501	ν_3=41.5
r_6=	9.205	d_6= 4.33	n_4=1.48656	ν_4=84.5
r_7=	−8.871	d_7= 0.56		
r_8=	−121.77	d_8= 0.88	n_5=1.80440	ν_5=39.6
r_9=	8.806	d_9 = 4.57	n_6=1.48656	ν_6=84.5

r_{10}=	−11.865			
		d_{10}=14.54		
r_{11}=	8.3			
		d_{11}= 2.29	n_7=1.72000	ν_7=50.3
r_{12}=	−27.195			
		d_{12}= 0.78	n_8=1.62012	ν_8=49.6
r_{13}=	5.803			

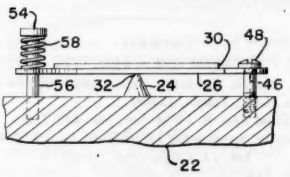
wherein r_1 to r_{13} inclusive designate the radii of curvature of successive lenses, d_0 to d_{12} inclusive designate the lens thicknesses and air spaces between the lenses, n_1 to n_8 inclusive designate the refractive indexes and ν_1 to ν_8 inclusive designate the Abbe numbers of the lenses numbering from the front to the rear of the objective.

3,879,112

ADJUSTABLE MIRROR MOUNT

Roy E. Hickey, Honeoye Falls, N.Y., assignor to The Singer Company, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,471
Int. Cl. G02b *5/08*
U.S. Cl. 350—288 **8 Claims**



1. An adjustable light reflective surface for an image projection system having an optical center line comprising:

a member having a light reflective surface; a pivot point adjacent said light reflective surface and substantially in line with said optical center line of said projector system; means to resiliently bias said member against said pivot point;

first means for adjustably rotating said member about a first axis passing through said pivot point;

second means for adjustably rotating said member about a second axis substantially perpendicular to said first axis and also passing through said pivot point.

3,879,113

PHOTO-REFRACTOMETER AND METHODS FOR OPHTHALMIC TESTING OF YOUNG CHILDREN

Howard C. Howland, 205 Winston Dr., Ithaca, N.Y. 14850, and Bradford Howland, 77 Massachusetts Ave., Cambridge, Mass. 02139

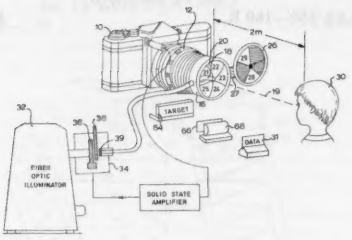
Filed May 7, 1973, Ser. No. 358,246
Int. Cl. A61b *3/14*
U.S. Cl. 351—7 **10 Claims**

1. A method of testing the eyes of a subject comprising the steps of

a. directing a flash from substantially a point source toward the eyes of said subject,

b. capturing the retroflected light from the retina of an eye by a photographic camera having a lens and a plurality of cylinder lenses overlaying said camera lens surrounding said source, and

c. measuring the size and ellipticity of the beam of retroflected light from said eyes for at least two colors whereby



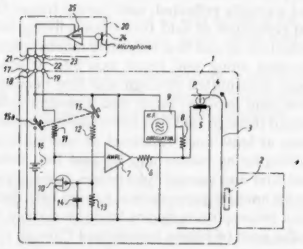
said size and ellipticity is a function of the refractive and astigmatic states of said eyes.

3,879,114

SOUND FILM CAMERA WITH DAMPING CIRCUIT

Volkmar Stenzenberger, Unterhaching, and Eduard Wagensonner, Aschheim, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 27, 1974, Ser. No. 483,671
Claims priority, application Germany, June 28, 1973, 2333011
Int. Cl. G03b *31/02*
U.S. Cl. 352—29 **7 Claims**

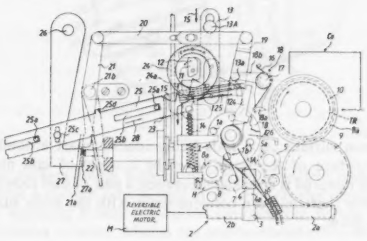


1. In a motion picture camera having film, a sound track on said film, transport means for transporting said film along a predetermined path, said transport means requiring a determined start-up time for reaching a determined operating speed from a stopped condition, and transfer means for transferring audio signals furnished to said motion picture camera to said sound track: damping means connected to said transfer means for damping said audio signals during said determined start-up time, said damping means further comprises timing means for furnishing a timing signal varying as a predetermined function of time following said start-up of said transport means.

3,879,115
MOTION PICTURE CAMERA WITH MECHANISM FOR MAKING EXPOSURES WITH LAP DISSOLVE

Siegfried Werz, Munich, and Johann Zanner, Jr., Unterhaching, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 16, 1973, Ser. No. 333,147
Claims priority, application Germany, Feb. 23, 1972, 2208405
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 S **5 Claims**



1. In a motion picture camera, a combination comprising an adjustable diaphragm having an aperture of variable size; reversible film transporting means; a lap dissolve mechanism operable to expose motion picture film in a plurality of stages including a first stage of exposing a predetermined number of film frames with fade-out effect while said transporting means advances the film forwardly and of thereupon effecting rearward transport of said predetermined number of frames, and a second stage of exposing the rearwardly transported frames with fade-in effect while said transporting means advances the film forwardly, said mechanism comprising means for automatically reversing said transporting means in response to completion of exposures with fade-out effect and adjusting means for gradually reducing the size of said aperture from a maximum value to zero during the making of exposures with fade-out effect and for gradually increasing the size of said aperture from zero to said maximum value during the making of exposures with fade-in effect; operating means actuatable to initiate the operation of said mechanism; overriding means movable between first and second positions independently of said operating means; motion transmitting means connecting said overriding means with said adjusting means so that said adjusting means changes the aperture size to zero in response to movement of said overriding means to said first position and to said maximum value in response to movement of said overriding means to said second position; and means for rendering said reversing means ineffective in response to movement of said overriding means to said second position during the making of exposures with fade-out effect.

3,879,116
VIEWER PROVIDING AUTOMATIC CASSETTE OPERATION IN ACCORDANCE WITH PROCESSOR INDICATOR

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

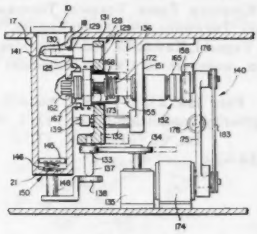
Division of Ser. No. 227,093, Feb. 17, 1972. This application Jan. 2, 1974, Ser. No. 430,029
Int. Cl. G03c *11/00*
U.S. Cl. 352—130 **27 Claims**

1. Photographic apparatus for use with a cassette such cassette including a housing, a strip of photographic material and means for alternately cooperating with other apparatus for performing a first operational program with such strip of photographic material or at least one of other operational programs with such strip of photographic material and for indicating to such other apparatus whether said first operational program has been performed, said apparatus comprising:

an apparatus housing;

receiving means configured to operably receive such cassette;

means for sensing the indication of such cassette means and for cooperating with such cassette means for performing



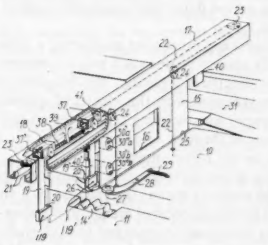
said first operational program if such cassette means indicates that said first operational program has not been performed; and

means responsive to completion of said first operational program for displacing such cassette from a first position where it is in operative relation to said apparatus to a second position where it is not in said operative relation thereto.

3,879,117
APPARATUS FOR THE VISUAL DISPLAY OF INSCRIPTIONS ON TRANSPARENCIES

Jean J. Damlamian, 4, Rue Lazare Carnot, 92140 Clamart, France

Filed Oct. 2, 1973, Ser. No. 402,828
Claims priority, application France, Oct. 4, 1972, 72.35164
Int. Cl. G03b *31/06*
U.S. Cl. 353—19 **6 Claims**



1. A device for projecting a transparency carrying a magnetic tape section having magnetically recorded thereon binary digital words representative of alphanumerical characters, said device comprising:

means for imparting to the transparency a constant velocity movement from a feed position to a projection position; means for writing or reading said binary digital words during said movement and for visualizing the corresponding alphanumerical characters including a magnetic head means co-operating with said magnetic tape section during said movement;

a writing-in register;

a reading-out register;

each of said writing-in register and reading-out register connected to said magnetic head means;

a binary-word to alphanumerical character converter connected to said reading-out register, a visual display panel connected to said converter; and,

a pulse-clock generator synchronized with said movement imparting means and controlling said registers and said converter.

3,879,118

EXPOSURE CONTROL APPARATUS

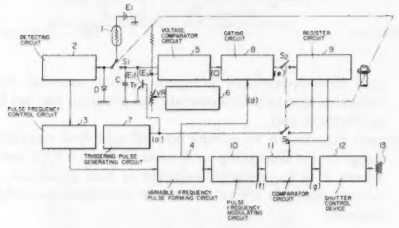
Takehiko Kiyohara, Zama; Tokuichi Tsunekawa, Yokohama; Yoshiyuki Takishima; Soichi Nakamoto, both of Tokyo; Tetsuya Taguchi, Kawasaki, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1974, Ser. No. 435,832

Claims priority, application Japan, Feb. 1, 1973, 48-13430

Int. Cl. G03b *7/08, 17/18*

U.S. Cl. 354—24 **15 Claims**



1. An exposure control apparatus comprising;

photoelectric means for converting an amount of light to an electric quantity,

memory means,

pulse entry means connected with said memory means,

shutter control means for producing shutter operating signal,

comparing means responsive to a signal from said control means and coupled to the memory means for reading out the contents of it and controlling said control means for a time period dependent upon the content of the memory means,

pulse producing means for producing a sequence of sets of equally spaced pulses each sets corresponding in number to the electrical quantity, the frequency of which is in inverse-relation with the electrical quantity,

said memory means being connected to said pulse producing means through said entry means for storing a count equal to the pulse entered,

said entry means having a gate means for applying said pulse to said memory means in response to a shutter operating signal from said control means, and a time-forming circuit means selectively connected to said photoelectric means for producing a gate pulse signal for said gate means, the pulse width of which is in relation with the electrical quantity, and

detecting means coupled to said memory means for producing a shutter closing signal when the pulse have read the full count by said comparing means.

3,879,119

PHOTOGRAPHIC PROCESSING APPARATUS

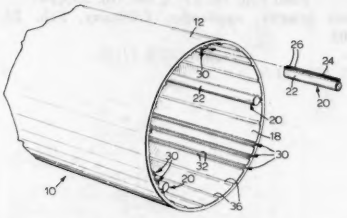
Simon Ratowsky, Downsview, Ontario, Canada, assignor to Monrick Holding Limited, Downsview, Ontario, Canada

Filed Feb. 12, 1973, Ser. No. 331,787

Int. Cl. G03d *13/02*

U.S. Cl. 354—335 **6 Claims**

1. In a carrier for use in processing photographic sheet material, said carrier comprising a hollow cylindrical drum having end closing means, a plurality of spaced retaining rods longitudinally disposed in parallel relationship along the inner surface of the drum, each of said rods having a main body portion convexly curvilinear in cross-section and a shank interconnecting the main body portion with the drum surface to space the main body portion a predetermined distance from



the drum surface, said rods being spaced apart around the inner surface of the drum whereby a sheet of said photographic material is receivable between a pair of said rods to lie arcuately therebetween concentrically with the inner surface of the drum.

3,879,120

ELECTROSTATIC LATENT IMAGE TRANSFERRING APPARATUS

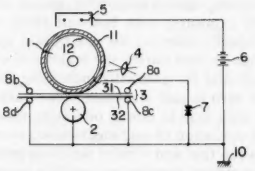
Junji Kurokawa, and Susumu Tatumi, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1973, Ser. No. 422,792

Claims priority, application Japan, Dec. 15, 1972, 47-124188

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **5 Claims**



1. An electrostatic latent image transferring apparatus for use in electrophotography, comprising: a photosensitive drum consisting of a photosensitive layer on a conductive body; a conductive transferring roller disposed in contact with said photosensitive layer for transferring an electrostatic latent image formed on said photosensitive layer to an interposable electrostatic recording paper consisting of an image-receiving dielectric layer on a conductive paper support; a chassis of the apparatus for supporting said drum and said roller; and a varistor having one terminal electrically connected with said conductive body and the other terminal grounded through the chassis of the apparatus, said transferring roller being grounded through the chassis of the apparatus and said photosensitive drum being insulated relative to the chassis of the apparatus.

3,879,121

TRANSFER SYSTEM

Henry Wellington Simpson, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

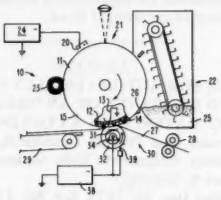
Filed Dec. 13, 1973, Ser. No. 424,492

Int. Cl. G03g *15/16*

U.S. Cl. 355—3 R **3 Claims**

1. An electrostatic printer of the type having an imaging surface on which an electrostatic image can be impressed and

a physical image developed thereon with marking material bearing an electrostatic charge of a first polarity, transfer means cooperable with said imaging surface and with image support material for transferring at least a portion of said physical image from said imaging surface to said image support material, said transfer means including movable and yieldable cylindrical means having an outer surface for pressing said image support material into contiguous relation with said imaging surface and the physical image thereon, said



outer surface being formed of a thin dielectric material to provide a current flow barrier layer, and transfer electrostatic field applying means positioned opposite the region of said contiguous relation, wherin the improvement comprises:

electrical conductor means contacting said dielectric material at a location displaced from said region of contiguous relation and providing a conductive path for periodically removing charge from said outer surface of said yieldable cylindrical means.

3,879,122

ELECTROSTATIC COLOR COPYING MACHINE

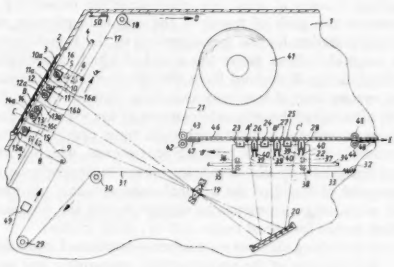
Richard Wick, Munich; Friedrich Bestenreiner, Grunwald, and Dieter Giglberger, Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 21, 1974, Ser. No. 444,262

Claims priority, application Germany, Feb. 21, 1973, 2308651

Int. Cl. G03g *15/06*

U.S. Cl. 355—4 **25 Claims**



1. In an electrostatic machine for the reproduction of multicolored originals, a combination comprising a first unit arranged to illuminate discrete strip-shaped portions of an original in different colors; means for effecting a relative movement between the original and said first unit to thereby illuminate successive strip-shaped portions of the original in each of said different colors; guide means for a web or sheet of recording material; a second unit adjacent to said guide means and including pairs of charging and developing means, one pair for each of said different colors; means for effecting a relative movement between the recording material and said second unit; and optical means for directing differently colored light rays produced by said first unit between said charging and developing means of the respective pairs, wherein each of said charging means comprises a corona discharge device arranged to uniformly charge successive increments of said recording material ahead of the respective developing means during relative movement between said second unit and the recording material.

3,879,123

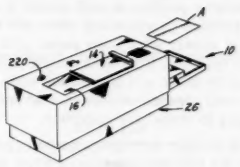
COPY MACHINE

William G. Fisher, Union City, Ga., assignor to B. J. Powell, Atlanta, Ga.

Filed Jan. 26, 1973, Ser. No. 327,126

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **8 Claims**



1. In a copy machine for reproducing a visual image from an original document onto copy paper, the improvement comprising:

a photoconductive insulating master:

conveyor means for selectively moving said master along a first prescribed endless path from an initial position;

charging means for selectively imposing an electrostatic charge on said master;

exposure means for selectively exposing said charged master with the visual image from the original document to form a corresponding latent electrostatic image on said master; said exposure means including a support track fixed relative to said endless path adjacent said initial position, a lens and light assembly movably mounted on said support track for movement over said master in said initial position in a first direction and a second direction, and lens drive means for selectively moving said lens and light assembly along said support track in said first and second directions, said charging means mounted on said lens and light assembly for movement therewith;

developing means adjacent said first path at a first position, said developing means having a first operative condition for developing the latent electrostatic image on said master as said conveyor moves said master past said first position, and a second inoperative condition for not developing the latent electrostatic image on said master as said conveyor moves said master past said first position; cleaning means adjacent said first path at a second position, said cleaning means having a first operative position for cleaning said master as said conveyor means moves said master past said second position, and a second inoperative position for not cleaning said master as said conveyor means moves said master past said second position; feed means for selectively moving said copy paper into juxtaposition with and registration over the developed image on said master;

transfer means for transferring said developed image from said master to said copy paper in juxtaposition with said developed image; and

control means operatively connected to said conveyor means, said developing means, said cleaning means, said charging means, said exposure means, said feed means and said transfer means for causing said conveyor means to hold said master stationary in said initial position while causing said charging means to impose a blanket electrostatic charge on said master during movement of said lens and light assembly and said charging means in said first direction followed by causing said lens and light assembly

to expose said master to the visual image on the original document to produce a latent electrostatic image on said master corresponding to said visual image during movement of said lens and light assembly in said second direction, for thereafter causing said conveyor means to move said master along said prescribed path past said first position and for selectively activating said developing means as said master moves thereby to cause said developing means to assume said first operative condition and develop said latent image, for thereafter causing said feed means to feed said copy paper onto said master in registration with said developed image as said master continues to move along said path, for causing said transfer means to transfer said developed image from said master to said copy paper as said master continues to move, for selectively causing said cleaning means to assume said first operative position as said master is moved past said second position to selectively clean any remaining image from said master after copy paper with the transferred image is removed from said master and as said master continues to move, and for causing said conveying means to stop said cleaned master in said initial position for recharging to repeat the operation.

3,879,124

APPARATUS FOR REMOVING REMNANTS OF POWDER IMAGES IN ELECTROPHOTOGRAPHIC COPYING MACHINES

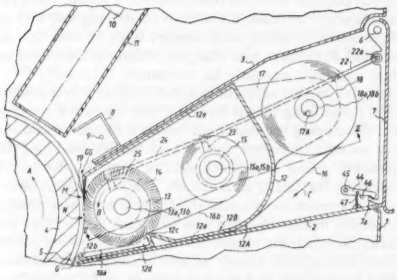
Rudolf Eppe, Sudstr. 5, 8021 Taufkirchen; Georg Fryda, Ganghoferstr. 52, 8 Munich 2; Ludwig Mullritter, Gogrdelerstr. 20, 8025 Unterhaching; Gunther Schnall, Garchinger Str. 20, 8052 Eching; Hans-Joachim Schrecke, Strehlanger 11, 8 Munich 83; Josef Pfeifer, Ter-Meer-Str. 10, 8025 Unterhaching, and Gunther Abbe, Meginhardstr. 30, 8031 Gilching, all of Germany

Filed Dec. 5, 1973, Ser. No. 397,652

Claims priority, application Germany, Sept. 16, 1972, 2245575

Int. Cl. G03g *15/00*

U.S. Cl. 355—15 **25 Claims**



1. In an electrophotographic copying machine, a combination comprising a photoconductive layer movable in a predetermined direction along an endless path to thereby receive toner-containing powder images in a first portion of said path and to be relieved of powder images in a second portion of said path whereby at least some toner particles normally adhere to said layer in a third portion of said path along which said layer advances toward said first portion; and apparatus for removing toner from said layer in said third portion of said path, comprising a substantially cylindrical brush including a rotary core and flexible toner-removing bristles surrounding said core and arranged to contact successive increments of said layer whereby said bristles undergo deformation in response to movement into contact with said layer and reassume their undeformed positions relative to said core in response to termination of contact with said layer, a source of band-like toner-collecting material, rotary takeup means for drawing said band-like material from said source, and guide means having a projecting portion for urging said band-like material against said bristles downstream of the locus where said bristles move away from contact with said layer and a second portion adjacent to said layer, said band-like material being arranged to travel from said second portion of said guide means toward said projecting portion of said guide means so that a stretch thereof between said portions of said guide means intercepts toner particles which leave said brush as a result of termination of deformation of said bristles and/or under the action of centrifugal force.

3,879,125

APPARATUS FOR AUTOMATICALLY CONTROLLING THE SPEED OF TRAVEL OF AN ORIGINAL AND OF COPYING MATERIAL IN A COPYING MACHINE

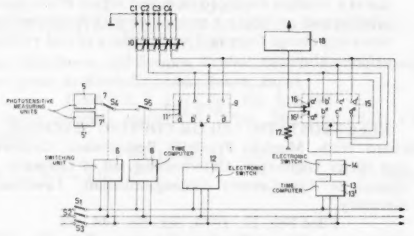
Herbert Schröter, and Werner Dennhardt, both of Taunusstein, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 26, 1973, Ser. No. 427,621

Claims priority, application Germany, Dec. 29, 1972, 2263952

Int. Cl. G03b *27/46*

U.S. Cl. 355—68 **10 Claims**



1. In an apparatus for automatically controlling the speed of travel of an original and of copying material in dependence upon the translucency of the original for use in a copying machine having at least one photosensitive measuring unit means in the path of travel of the original upstream of an exposure station for the measurement of the translucency of the original, a drive motor the speed of which is controllable through a signal derived from the photosensitive measuring unit means, and at least one switching element means in the path of travel of the original upstream of the exposure station, the improvement which comprises time computer means, actuatable by said switching element means, which during a time computed by said computer means in dependence upon the speed of travel of the original, connects said photosensitive measuring unit means to storage means the potential of which serves for speed control of the drive motor,

said switching element means being positioned immediately downstream of the photosensitive measuring unit means, and said switching element means being actuatable by the leading edge of the original.

3,879,126

FLAME PHOTOMETRIC DETECTOR EMPLOYING PREMIXED HYDROGEN AND OXYGEN GASES

Richard Brandt Delew, Corte Madera, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 232,926, March 8, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 389,614

Int. Cl. G01j *3/30*

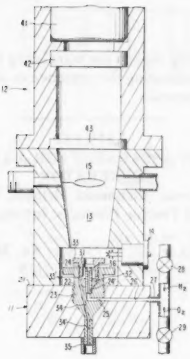
U.S. Cl. 356—87 **6 Claims**

1. Flame photometric detector apparatus comprising burner means;

a first conduit for connection to a source of selfcombustible gas, said self-combustible gas being a mixture of a fuel gas and a combustion supporting gas, said self-combustible gas being capable of supporting combustion without addition of any further gases;

a second conduit for connection to a source of sample material to be analyzed;

said burner means including a flame tip, said flame tip having a self-combustible gas outlet, said burner means further including a first passageway and a second passageway, said first passageway being connected between said first conduit and said flame tip self-combustible gas outlet, said second passageway being separated from said first passageway and being connected to said second conduit, said second passageway having an outlet radially displaced from said self-combustible gas outlet for delivery, in operation, of said sample to the cooler side peripheral region of a flame, and



a photodetector means adopted to receive, in operation of said system, photoemission from said sample for qualitative and quantative detection of said sample.

3,879,127

METHOD OF SAMPLE PREPARATION FOR SAMPLE ANALYSIS

Kenneth Storr, Chertsey, England, and Marcel Bonnafe, Vetraz-Monthoux, France, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

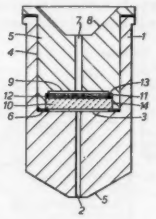
Filed July 12, 1972, Ser. No. 270,911

Claims priority, application United Kingdom, July 13, 1971, 32733/71

Int. Cl. G01n *1/00*

U.S. Cl. 356—36 **3 Claims**

1. A method of analysis of liquids, including the preparatory steps of applying a whole blood sample to a sample carrier of absorbent and porous sheet material, treating the sample when absorbed by said carrier to fix a particular constituent of the sample, then traversing said carrier with an eluting fluid to remove a selected unfixed constituent of interest from said carrier for analysis, and passing said eluting fluid containing



said selected constituent through a chromatography column for analysis.

3,879,128

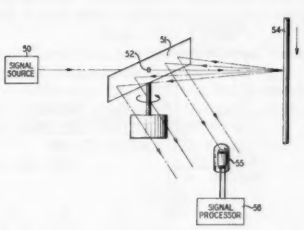
METHOD AND APPARATUS FOR MEASURING THE REFRACTIVE INDEX AND DIAMETER OF OPTICAL FIBERS

Herman Melvin Presby, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 15, 1973, Ser. No. 388,455

Int. Cl. G01n *21/00, 21/18, 21/30*

U.S. Cl. 356—73 **8 Claims**



1. The method of controlling the diameter of an optical fiber comprising the steps of:

illuminating said fiber with the beam from a CW laser;

converting the backscattered radiation pattern produced by said illuminated fiber into a time-varying electrical signal;

generating a pulse train whose pulse width equals the time interval between selected adjacent minima or maxima along said electrical signal;

and using said pulse train to control the rate at which said fiber is being pulled.

3,879,129

METHOD OF AND APPARATUS FOR MEASURING SIZE AND CONCENTRATION OF PARTICLES

Toshio Inoue, Tokyo, Japan, assignor to Ichiro Kato, President, University of Tokyo, Tokyo, Japan

Filed Sept. 6, 1972, Ser. No. 286,658

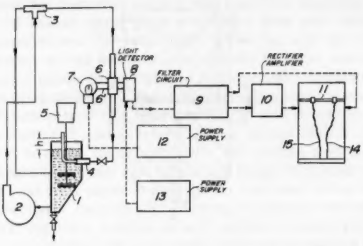
Claims priority, application Japan, Sept. 7, 1971, 46-69169

Int. Cl. G01n *15/02, 21/06*

U.S. Cl. 356—102 **2 Claims**

1. An apparatus for simultaneously measuring the size and concentration of particles comprising a tank containing liquid in which are suspended the particles to be measured, a measuring unit connected to said tank for receiving said liquid and passing light rays therethrough to produce an electrical output, a filter circuit connected to said measuring unit for separating said electrical output into direct current and alternating

current components, and a recorder connected to said filter curcit and provided with a record sheet on which are recorded



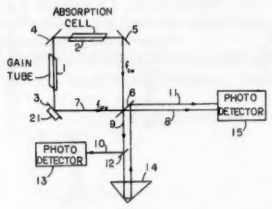
said direct current and alternating current components, respectively.

3,879,130

METHOD AND APPARATUS FOR THE OPERATION OF RING LASER IN A BIASED MODE

Howard B. Greenstein, P.O. Box 993, Palo Alto, Calif. 94302

Filed May 16, 1973, Ser. No. 360,728
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 LR **28 Claims**



1. A method of operating a ring laser in a biased mode, said laser having a gain medium and at least three reflector means defining a single ring cavity, comprising the steps of establishing the oscillation on a first cavity mode of a first traveling wave, establishing the simultaneous oscillation on a second and different cavity mode of the same ring cavity of a second traveling wave differing in frequency from and contra-directional to the first traveling wave, and suppressing contra-directional oscillations of the same frequency as at least one of the first or second traveling waves.

3,879,131

PHOTOMASK INSPECTION BY REAL TIME DIFFRACTION PATTERN ANALYSIS

John David Cuthbert, Bethlehem; Delmer Lee Fehrs, Easton, and David Farnham Munro, Alburtis, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

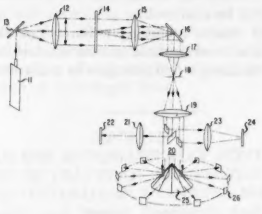
Filed Feb. 6, 1974, Ser. No. 440,151
Int. Cl. G01n *21/32*
U.S. Cl. 356—106 R **9 Claims**

7. Apparatus for detecting defects in a photomask having a substantially straight edge pattern thereon comprising:

a. a source of a beam of coherent light having a spot size which illuminates no more than two edges comprising a corner of the pattern at a time,

b. means for scanning the beam over said photomask,

c. means for collecting the light transmitted and diffracted by said photomask, and



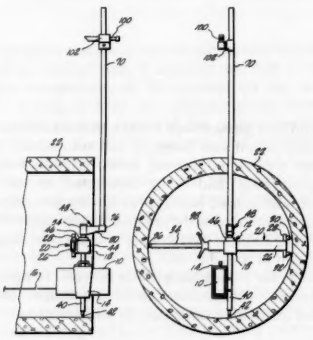
d. photodetecting means for translating the collected light into signals indicating the presence or absence of a defect in said photomask.

3,879,132

ALIGNMENT APPARATUS FOR A LIGHT BEAM GENERATOR

Rudolph S. Myeress, Richmond Heights, Ohio, assignor to Allied Steel and Tractor Products, Incorporated, Cleveland, Ohio

Filed Aug. 20, 1973, Ser. No. 389,947
Int. Cl. G01b *11/26*
U.S. Cl. 356—153 **9 Claims**



1. An alignment apparatus for a light beam generator used for construction measurement, comprising

a rod;

sight means for aligning said rod relative to a distant selected point, said sight means being rigidly positionable on said rod;

a pivotal support defining a pivot axis, said pivotal support being positionable relative to the ground, said pivotal support including means for fixing the light beam generator relative to said sight means; and

a lateral offset means for fixing said rod relative to said pivotal support at a laterally displaced position from the pivot axis of said pivotal support.

3,879,133

METHOD AND APPARATUS FOR COMPARING TWO OBJECTS HAVING SIMILAR SHAPES AND DIMENSIONS

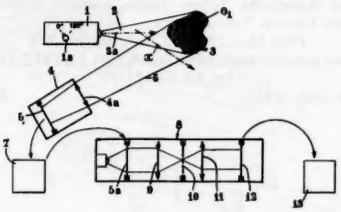
Ernst Mathieu, Aulnay-Sous-Bois, France, assignor to Compagnie Electro-Mecanique, Paris, France

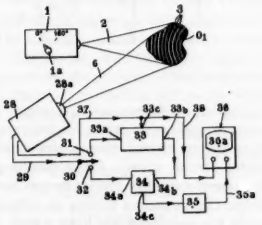
Filed Dec. 20, 1973, Ser. No. 426,436

Claims priority, application France, Dec. 21, 1972, 72.45722

Int. Cl. G01b *11/24*

U.S. Cl. 356—168 **5 Claims**





1. A method for comparing two three-dimensional objects having similar shapes and dimensions which comprises:

illuminating a side of one of the objects by a collimated light beam whose intensity is modulated in a direction transverse thereto at a spatial frequency of $1/p$, said modulated light beam generating on the illuminated side of the object a lattice of alternately dark and light parallel bands similar to interference fringes having a configuration in the manner of contour lines determined by the relief of the illuminated side of the object and pitch p,

similarly illuminating the other object but wherein the intensity modulation is phase-shifted by 180°,

optically superimposing images of the illuminated sides of the two objects, and

obtaining from the superimposed images the differential component thereof which is modulated at the spatial frequency $1/p$.

3,879,134

OPTICAL ROTOR FOR COLORIMETRIC ANALYSIS

Kenneth C. Huber; Charles F. Bino, both of Greensboro, N.C., and Roland Lee Connelly, Augusta, Ga., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 30, 1971, Ser. No. 139,168

Int. Cl. G02b *17/00;* **G01j** *3/46*

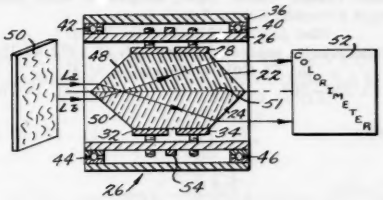
U.S. Cl. 356—174 **5 Claims**

1. An optical rotor comprising:

a first mirror shaped as a pyramid having a plurality of sides and a base,

a second mirror shaped as a pyramid having a plurality of sides and a base with the base of said second mirror mating with the base of said first mirror so that light beams of an image incident upon one of the sides of one of said mirrors is reflected at an angle with respect to a fixed plane which varies with the angular position of said mirrors about an axis through said bases of said mirrors, a plurality of concave mirrors, and

means for mounting said concave mirrors with their concave surfaces facing said pyramid-shaped mirrors so as to define first and second apertures for receiving an image



and transmitting a rotated image and so that beams of an image entering said first aperture, incident upon one of the sides of one of said pyramid-shaped mirrors, and reflected from that side are further reflected to said second aperture to form a rotated image which has an angular rotation which varies with the angular position of said pyramid-shaped mirrors about said axis.

3,879,135

PHOTOMETER CIRCUITRY FOR THE DIGITAL INDICATION OF THE LIGHT ABSORPTION OF A TEST SAMPLE AND FOR AUTOMATICALLY OBTAINING NULL BALANCE

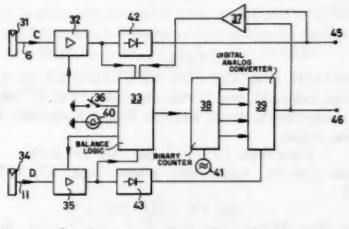
Bruno Egli, Rorschach, and Niklaus Manser, Goldach, both of Switzerland, assignors to Labtronic, AG

Filed Apr. 24, 1973, Ser. No. 353,965

Claims priority, application Germany, Apr. 25, 1972, 2220231; Apr. 25, 1972, 2220230

Int. Cl. G01n *21/22;* **G01j** *1/42*

U.S. Cl. 356—206 **9 Claims**



1. Circuitry for the automatic nulling of a photometer comprising:

test signal means for providing a first signal in accordance with the light transmission properties of a test sample;

comparison signal means for providing a second signal in accordance with a comparison light beam;

a first amplifier of controllable amplification coupled to said test signal means for amplifying said first signal;

a second amplifier of controllable amplification coupled to said comparison signal means for amplifying said second signal;

logic means coupled to said amplifiers for altering the amplification thereof in a first predetermined stepwise manner for amplifying the difference between said first and second signals;

signal magnitude adjustment means interposed at the output of one of said amplifiers and receiving one of said signals for altering its magnitude in a second predetermined stepwise fashion into equality with the other of said signals; and

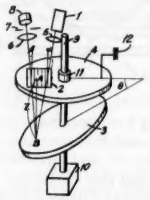
a comparator for receiving said first and second signals and for providing an output indicative of the magnitudinal difference between them.

3,879,136

METHOD AND SYSTEM UTILIZING MOIRE CONTOURS FOR DIGITAL GONIOMETRY

Hideomi Takeda, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 26, 1973, Ser. No. 382,877
Claims priority, application Japan, July 28, 1972, 47-75690
Int. Cl. G01m *21/48;* **G01d** *5/34*
U.S. Cl. 356—209 **16 Claims**



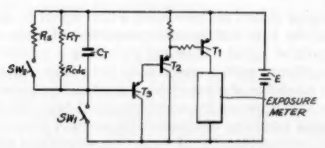
1. In a goniometry method, the steps of directing light through a stationary transmissive difraction grating which is situated in a grating plane to a reflecting point situated in a reflecting plane which is inclined to said grating plane to provide a moire pattern contour and which is formed by a flat reflecting surface of a rotary body which has an axis of rotation passing through both of said planes at an angle other than a right angle with respect to said reflecting plane, rotating said body about said axis of rotation thereof so that the reflection point of said reflecting plane sinusoidally approaches and recedes from said grating, to provide a continuously varying moire contour, converting light reflected from said reflecting point into an electrical signal having properties corresponding to the properties of the reflected light resulting from the continuously varying moire contour, and converting said electrical signal into a series of pulses indicative of a predetermined unit angle.

3,879,137

CONTROL CIRCUIT FOR AN EXPOSURE METER

Tadazumi Sakazaki, and Hirokazu Ando, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 19, 1973, Ser. No. 398,810
Claims priority, application Japan, Sept. 22, 1972, 47-109495
Int. Cl. G01j *1/42*
U.S. Cl. 356—218 **9 Claims**



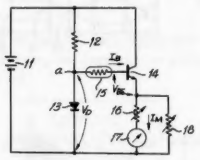
1. A control circuit for controlling the duration of operation of an exposure meter adapted to be energized from an electrical energy source, said control circuit comprising a semiconductor switch including a grounded-emitter transistor means having the exposure meter connected as an output load thereof for passing current from an electrical energy source through the transistor means to the exposure meter, timing circuit means electrically connected to the base of said transistor means for automatically determining the duration of operation thereof and including capacitor means and resistance means connected in parallel, switch means serially connected between said timing circuit means and the electrical energy source for instantaneously charging, when in a closed position, said capacitor means with a voltage which is applied to the base of said transistor mans for rendering it conductive until the voltage across the capacitor means discharges through said resistance means.

3,879,138

ELECTRICAL LIGHT-MEASURING SYSTEMS

Katsumi Kobayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Yashica, Tokyo, Japan

Filed May 29, 1973, Ser. No. 364,738
Claims priority, application Japan, May 31, 1972, 47-63331
Int. Cl. G01j *1/44*
U.S. Cl. 356—226 **3 Claims**



1. In an electrical light-measuring system, meter circuit means including an indicating meter for indicating light intensity, current-amplifier circuit means electrically connected with said meter circuit means for controlling the current thereof, said current-amplifier circuit means having an input, constant voltage circuit means having an output, and photosensitive means for receiving the light which is to be measured, said photosensitive means being electrically connected between said output and input, said meter circuit including a series variable resistor connected in series with said indicating meter for varying the slope of the relationship between the resistance of said photosensitive means and the current which flows through said indicating meter, and a parallel variable resistor connected across the series connected series variable resistor and indicating meter in parallel therewith for changing the range of said relationship, said current-amplifier circuit means including a transistor having a base connected to said photosensitive means and an emitter connected in series with said series variable resistor and indicating meter.

3,879,139

DISPOSABLE TOOTHBRUSH ASSEMBLY

Rulon R. Dahl, West Jordon, and Garnett O'Brien Garrett, Salt Lake City, both of Utah, assignors to Developmental Design, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 363,232, May 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 239,154, March 29, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,519
Int. Cl. A46b *11/02*
U.S. Cl. 401—135 **13 Claims**

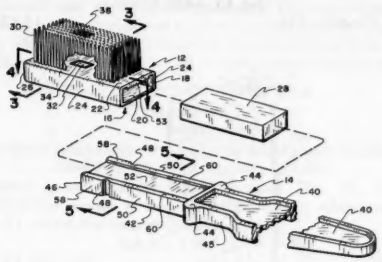
1. A disposable toothbrush assembly comprising:

a head formed from yieldable plastic material having memory comprising a hollow base defined by side walls, a bottom wall, a top wall and an end wall but open at the other transverse end, said head comprising a plurality of bristles extending from the top wall of the base, a port centrally disposed in said top wall of the base interconnecting the bristles with the interior of the base, and a removable closure substantially filling the port;

a quantity of tooth cleansing or treating material disposed within and filling essentially all of the hollow of the base

except a short distance adjacent said base opening, the tooth material being contiguous with the closure;

a separate handle formed of substantially rigid plastic material having an enlarged leading end portion sized to enlarge the cross-sectional area of the base by expanding the yieldable plastic material as the handle is telescopically inserted into the hollow of the base, the handle comprising a reduced size guide portion adjacent the leading end portion sized to allow yieldable plastic to flow



and lock behind the enlarged section to engage the side walls of the base to maintain axial alignment between the base and handle during said insertion, memory of the base material constricting the base cross-sectional area into said engagement, the handle comprising a tooth material extrusion chamber extending across the leading end portion and the guide portion whereby the tooth material flows back to the central port along the extrusion chamber after the leading end portion of the handle passes the extrusion port during insertion.

3,879,140

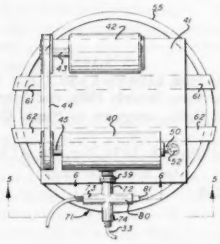
PAINTING APPARATUS

Erwin A. Ritter, 3662 Bendermeer Rd., Cleveland Heights, Ohio 44118

Filed Jan. 11, 1973, Ser. No. 322,798

Int. Cl. B44d *3/28*

U.S. Cl. 401—188 **2 Claims**



1. An apparatus for use in applying paint in a container to a surface comprising paint applicator means movable along the surface to apply paint directed thereto to the surface, conduit means for directing paint from said container to said applicator means, a pump having an inlet in communication with the paint in the container and operable to continuously draw paint from the container, said pump having an outlet communicating with said conduit means and into which said pump directs the paint and through which the paint is forced by said pump to said applicator means, means for continuously directing at least a part of said paint from the outlet of said pump back to the container to continuously mix the paint in the container while paint is being delivered to said applicator means for application to the surface, said conduit means comprising a hollow handle for supporting said paint applicator and through which paint is directed to said paint applicator, and a flexible conduit connected to the pump outlet and directly connected to said hollow handle, said apparatus further including a telescoping handle having a separate connection with said hollow handle enabling said telescoping handle to be removed from said hollow handle without disconnection of said flexible conduit therefrom, and said telescoping handle being hollow and said flexible conduit extending therethrough.

3,879,141

INSTRUMENT FOR APPLYING A VISCOUS LIQUID

Valerie Shulman, 295 Tillou Rd., South Orange, N.J. 07079

Filed Oct. 10, 1973, Ser. No. 405,127

Int. Cl. B43k *1/06*

U.S. Cl. 401—265 **6 Claims**

1. An instrument for applying viscous fluid in the form of writing, comprising:

a flexible tubular body having a closed end and a dispensing end;

a viscous fluid contained in said body, said fluid including polyvinyl acetate, and

a dispensing member having a relatively wide mouth portion which is secured to the dispensing end of said body, said mouth portion narrowing circumferentially to form an apertured writing tip, said dispensing member including: an elongated channel forming a communicating passage between said body and the aperture of said writing tip; and

an annular protrusion at said writing tip forming a guide lip which is adapted to contact said writing surface, said protrusion having at least one slot therein adapted to form the shape of the material dispensed from said tip.

3,879,142

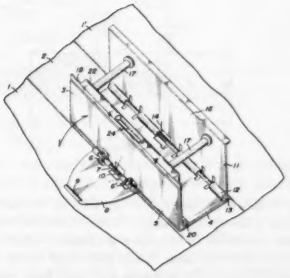
LOCKING APPARATUS FOR PUNCH-TYPE FILE

Yasukatu Takimoto, 1 Takamatu 393, Sakai-shi, Osaka, Japan

Filed Aug. 31, 1973, Ser. No. 393,448

Int. Cl. B42f *3/04*

U.S. Cl. 402—25 **3 Claims**



1. A punch-type file for punching and filing documents in a file cover comprising a mounting plate having a bottom part and a side part formed into a generally L-shaped configuration and secured to said file cover at its bottom part, a support plate having a first part and a second part formed into a generally L-shaped configuration, said first and second parts being joined to one another at a generally right angle juncture, means pivotally mounting said support plate at said right angle juncture to said bottom part of said mounting plate for pivotal

movement between a first position and a second position in which said bottom part of said mounting plate is generally coextensive to said first part of said support plate and said side part of said mounting plate is disposed in spaced parallel relation relative to said second part of said support plate, punch bars secured to and disposed generally perpendicularly to said first part of said support plate, a pressing plate having a main section and a backing section joined to one another with a generally U-shaped part with said main section being disposed generally parallel to said backing section, said backing section having punch openings, means pivotally mounting said pressing plate on said second part of said support plate, said pressing plate being pivotal to a punching position in which said pressing plate is disposed substantially parallel to said first part of said support plate and in which said punch bars are received in said punch openings in said backing section, said pressing plate being pivotal to said punching position when said supporting plate is in said second position to effect punching of documents, said main section of said pressing plate being disposed generally parallel to and adjacent to said side part of said mounting plate, said second part of said support plate being disposed generally parallel to and adjacent to said bottom part of said mounting plate and said punch bars being engaged in said punch openings in said backing section when said support plate is in said first pivotal position, said support plate being pivotal from said second position to said first position as the punched documents are retained on said punch bars by engagement of the latter in said punch openings in said backing section, a locking member, means pivotally mounting said locking member on said mounting plate, said locking member having a hook-like part operable to engage said pressing plate to lock said support plate in said first position.

3,879,143

SCAFFOLD AND LIKE STRUCTURES

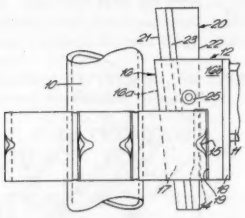
Peter Eric Gostling, Sutton Coldfield, England, assignor to C. Evans & Sons Limited, Gants Hill, Ilford, Essex, England

Filed Oct. 10, 1973, Ser. No. 405,090

Claims priority, application United Kingdom, Oct. 13, 1972, 47336/72

Int. Cl. E04G 7/00; F16B 7/00

U.S. Cl. 403—49 **8 Claims**



1. A connector assembly for use in interconnecting cross members with upright support members in builders scaffolding, said assembly comprising a channel-shaped element having a base wall and side walls provided to be fixed to one of said upright support members with said base wall being spaced from the peripheral surface of said support member, a hook element provided to be fixed to one of said cross members and formed with a slot having a closed end to receive said base wall of said channel-shaped element, and a wedge member mounted on said hook element and positioned so that, in use, it is within said channel-shaped element and is operable to urge the wall of said slot remote from said support member firmly into engagement with the surface of said base wall of said channel-shaped element remote from said support member, the arrangement being such that the free end of said hook element is spaced from the peripheral surface of said support member.

3,879,144

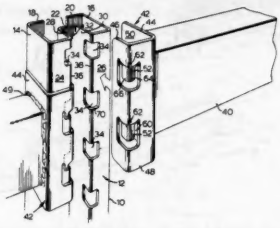
CONNECTOR MECHANISM

James Louis Eckerbrecht, Burlington, Ontario, Canada, assignor to Arcan Eastern Limited, Hamilton, Ontario, Canada

Filed July 11, 1973, Ser. No. 378,093

Int. Cl. A47b 57/16

U.S. Cl. 403—232 **12 Claims**



1. A connector for detachably securing a load-supporting member to a post having a front web and opposed side flanges, a continuous recess formed longitudinally centrally in said web defining a pair of spaced front faces and opposed side walls adjacent said front faces, said spaced front faces and opposed side walls forming a pair of opposed corners, and vertical apertures formed along at least one of said opposed corners, comprising: a connector plate having a pair of spaced, substantially parallel flanges joined by a web defining a recess between said flanges having a width substantially equal to the width of a web front face, one of said flanges secured to said load-supporting member, a downwardly extending projection struck inwardly from the material of the plate at the bight defined at the juncture of the other plate flange and the plate web, said projection being of a shape to enter an aperture formed in a said corner of the post member and to engage the interior walls of the post member by abutment therewith.

3,879,145

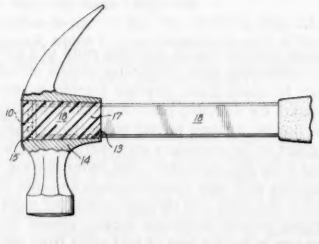
END PLUG FOR FIBERGLASS TOOL HANDLES

Joseph Allen Carmien, Beverly Hills, and John R. Yuhos, Van Nuys, both of Calif., assignors to Nupla Corporation, Sun Valley, Calif.

Filed May 28, 1974, Ser. No. 473,723

Int. Cl. F16b 12/04

U.S. Cl. 403—268 **6 Claims**



1. An end plug for fiberglass tool handles or the like of the type having an elongated handle mounted within the eye opening of a tool head, said end plug comprising a body member disposed within the end of said opening in transverse overlying relationship to the end of said handle, and potting

compound disposed within said opening and engaging said end plug and handle to hold said end plug and handle in fixed relationship to each other and to said tool head, said end plug having its outer periphery formed substantially complementarily and dimensionally equal to the cross-section of the inner periphery of said opening, the outer periphery of said end plug frictionally and resiliently engaging the inner periphery of said opening to maintain said end plug in place within said opening prior to the pouring of said potting compound, said end plug being formed of resilient material not bondable to said potting compound, said end plug having integral portions engagable with said potting compound to provide a physical interengagement which prevents displacement of said end plug from said potting compound after curing of said potting compound.

3,879,146

JOINT

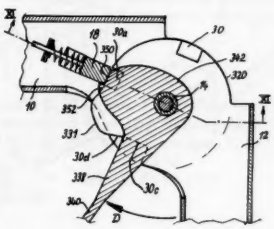
Otto Mayer, Muhlstrasse 76, D-7067 Pluderhausen, Germany

Filed Jan. 13, 1972, Ser. No. 217,498

Claims priority, application Germany, Jan. 15, 1971, 2101915The portion of the term of this patent subsequent to Feb. 21, 1989, has been disclaimed.

Int. Cl. F16c *11/00*

U.S. Cl. 403—93 **4 Claims**



1. A joint having two arms pivotable about a common axis and lockable with respect to each other in at least one predetermined angular position comprising:

a locking member mounted on one arm for radial movement with respect to the joint axis;

a peripheral edge on the second arm extending concentrically from the joint axis and having a plurality of notches formed on the edge;

spring means biasing said locking member towards said peripheral edge,

an unlocking lever pivoted about the joint axis relative to the joint arms and having a substantially eccentric control curve for engaging said locking member and rising above the peripheral edge of the second arm, wherein the control curve includes a lift portion which in the locked condition of the joint, faces one of the notches and increases eccentrically its center distance, and when above the periphral edge the control curve passes through a point of maximum center distance and then in a blocking portion remote from the notches in the locked condition of the joint, the center distance thereof decreasing to form a cam portion, the unlocking movement of said unlocking lever relative to the second joint arm being limited so that the blocking portion upon reaching the end position of the unlocking lever in its unlocking position faces the notches and crosses said peripheral edge radially outward in the region of the notches, one of the notches in said peripheral edge of the second arm being radially aligned with said locking member when in one end position of the joint, and having a rear flank bevelled for receiving the locking member during rotation of the second arm into the other end position of the joint so that during rotation, said locking member can slide on and out the rear flank, and

means for frictionally connecting said unlocking lever to the second joint arm.

3,879,147

WEDGE FOR GRIPPING A MULTI-PLY CABLE

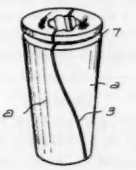
Juan Coll Morell, Calle Amilcar 209, Barcelona, Spain

Filed Oct. 25, 1973, Ser. No. 409,365

Claims priority, application Spain, Nov. 6, 1972, 185731

Int. Cl. F16g *11/04*

U.S. Cl. 403—369 **4 Claims**



1. In an assembly for gripping a multi-ply cable, a wedge having two longitudinal ends, a frustoconical outer surface between the ends and a helically grooved inner surface providing a bore to receive the cable extending longitudinally from end to end of the wedge, said helically grooved inner surface conforming substantially to the configuration of plies of a cable received in said bore, the wedge being circumferentially divided into a plurality of mutually separate complementary parts each of which extends from end to end of the wedge, and the circumferential divisions of the wedge extending helically along the latter in the interior of grooves at said inner surface of said bore helically along said grooves in the deepest parts thereof, the wedge further having a circumferential recess in its outer surface adjacent its larger end adapted to receive a retaining ring for maintaining the said parts in the assembled state.

3,879,148

GRAZING LIGHT REFLECTOR FOR ROADWAY PAVEMENT MARKERS

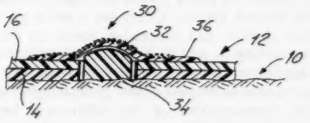
Ludwig Eigenmann, Vacallo, Ticino, Switzerland

Filed Mar. 19, 1974, Ser. No. 452,997

Claims priority, application Italy, Mar. 21, 1973, 21912/73

Int. Cl. E01c *23/16*

U.S. Cl. 404—10 **6 Claims**



2. In a reflector for roadway pavement markers, particularly for traffic regulating signs and markers which are adapted for retro-reflecting grazing light which impinges thereon and which are structurally associated with a layer superimposed on a roadway pavement which has an upper planar surface, a combination comprising a partially pliable component including a first flat circular portion juxtaposed on and firmly secured to the upper planar surface of the layer superimposed on the roadway, a second portion formed of a substantially planar pliable sheet having an outer surface area including a circular portion concentric with said first flat circular portion, a pliable intermediate portion connecting said first portion to said second portion and operative to allow said second portion to assume with respect to said first portion a first position in which said circular portion of said outer surface area of said second portion is positioned to receive impinging grazing light and to assume a second position in which said outer surface

area and said second portion are substantially coplanar with the upper planar surface of the layer on the roadway, and retro-reflective means formed with a monolayer of reflectorized beads secured to at least a part of said outer surface area of said second sheet portion; and resiliently deformable biasing means associated with said intermediate portion for applying to said second sheet portion a biasing force including a compressible body located below said second sheet portion and operative to upwardly urge said outer surface area of said second sheet portion into a bulging configuration with sufficient strength so as to restore said second sheet portion from said second position to said first position after a vehicle has passed, whereby said impinging grazing light is reflected when said second portion is in said first position and whereby the planarity of the roadway surface is not substantially affected when said second portion is in said second position.

3,879,149

METHOD AND APPARATUS FOR PROVIDING GRADE CONTROL FOR THE SCREED OF A PAVER OR THE LIKE

Donald W. Smith; Ronald W. Beaty, and Harry A. Barber, all of Aurora, Ill., assignors to Barber-Greene Company, Aurora, Ill.

Filed Sept. 18, 1972, Ser. No. 290,237
Int. Cl. E01c *19/00*
U.S. Cl. 404—72 **22 Claims**

1. The method of controlling a traveling roadway surface preparation machine for making a continuous roadway surface, which machine has a grade control element controllable in response to a grade control signal, said method comprising the steps of:

a. moving a mobile grade reference device over the subgrade along a predetermined path and continuously generating grade control intelligence having a horizontal control data factor and a factor representative of the vertical distances between successive points on the subgrade and an averaged grade reference point on said device;

b. storing said grade control intelligence;

c. moving the roadway surface preparation machine over the subgrade along said predetermined path and continuously generating grade profile intelligence representative of the vertical distances between a point on said grade control element and successive points on the subgrade corresponding to said first mentioned successive points;

d. integrating said grade control intelligence with said grade profile intelligence and generating grade control signals representative of the differences between the respective vertical distances of the former and the latter at corresponding ones of said points on the subgrade; and

e. controlling said grade control element in response to said grade control signals.

3,879,150

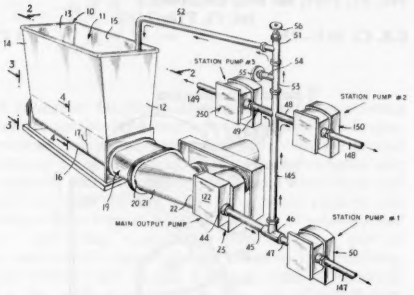
PUMPING SUPPLY SYSTEM FOR DELIVERING AT AMBIENT TEMPERATURE HIGHLY VISCOUS MATERIAL

Joseph L. Brown, Dallas, and Don L. Terry, Duncanville, both of Tex., assignors to Kentucky Fried Chicken Corporation, Louisville, Ky.

Filed Nov. 6, 1973, Ser. No. 413,237
Int. Cl. F04d *3/02*; B01f *7/08*, *15/02*
U.S. Cl. 415—72 **2 Claims**

1. A pumping supply system for delivering at ambient temperature highly viscous and butter-like paste material at a relatively uniform rate of flow and substantially free of air voids comprising, in combination;

1. a supply vat defining a supply chamber having a lateral bottom section provided at one end with a laterally directed outlet;
2. delivery pumping means having its intake flow connected to the vat outlet;
3. a pair of oppositely rotated and laterally extending driven delivery screws in the bottom section of said vat chamber extending in closely spaced general parallelism to said vat outlet which define therebetween a lateral trough-shaped receiving throat;
4. a pair of oppositely rotated, laterally extending and transversely spaced, flow-directing feeders mounted in said vat chamber bottom section relatively closely above said delivery screws, each comprising a driven lateral shaft carrying along its length and fixed thereto a plurality of substantially radially extending paddles; and
5. means to drive said feeder shafts in opposite certain directions that cause said paddles on each of said feeder



shafts to swing forward toward the other feeder shaft and downward through the transverse space intervening said feeders cooperatively to cause the latter to force the paste material down into the trough-shaped receiving throat between said screws;

6. said delivery pumping means having its discharge opening connected to delivery conduit means leading to use receiving means which demands less than the maximum delivery rate capacity of the delivery pumping means and said delivery conduit means, the latter having a terminal section defining a flow path back to said supply vat for return to the latter of the excess above the demand of the use receiving means; and
7. said use receiving means comprising a plurality of separate use receiving stations with a plurality of supply branch lines connected to said delivery conduit means between the delivery pumping means and the terminal return section with each branch line leading to one of said stations, each branch line including a separate flow rate controlling pump.

3,879,151

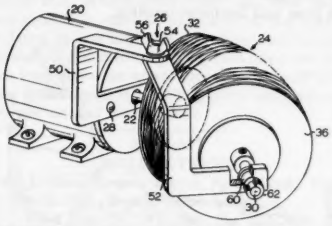
TOROIDAL FAN

Wlodzimierz I. Majewicz, 226 Fern Ave., Toronto, Ontario, Canada (M6R 1K4)

Filed Feb. 6, 1974, Ser. No. 440,118
Int. Cl. F01d *1/36*
U.S. Cl. 415—76 **4 Claims**

1. A rotor for use in moving a fluid with the rotor immersed in the fluid, the rotor comprising: first and second unperforated end plates including means adapted to couple the end plates to respective drive and driven spindles; and a plurality of flexible annular elements coupled to one another at a plurality of locations about these elements, there being a least

two such locations where each one of the elements is attached to an adjacent element, the spacings between each location and adjacent locations on the other side of the element being substantially the same for each location, and end ones of the elements being coupled to the respective end plates such that with the spindles on a common axis the elements are also



concentric about this axis and upon moving the end plates angularly with respect to one another, radial cavities are formed between said locations, said cavities varying in size as the rotor is turned and the cavities being largest where the end plates are farthest apart, the end plates extending unbroken across the said end ones of the elements so that in use the fluid does not move through the end plates axially into the rotor.

3,879,152

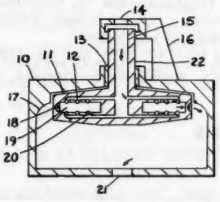
TURBINE

Michael Eskeli, 6220 Orchid Ln., Dallas, Tex. 75230

Continuation-in-part of Ser. No. 185,060, Sept. 30, 1971, Pat. No. 3,758,233. This application Aug. 7, 1973, Ser. No. 386,273

Int. Cl. F01d *1/18*

U.S. Cl. 415—80 **10 Claims**



1. A turbine stage for power generation responsive to flow of a fluid therethrough comprising:

a. a reaction rotor for producing said power; said rotor being rotated at a predetermined speed; said rotor having a plurality of reaction discharge passageways disposed near the periphery of said rotor and being oriented to discharge said fluid and generate torque on said rotor responsive to flow of fluid through said discharge passageways; said rotor being hollow and having a first cross sectional area at any radial distance radially exterior of a first fluid feeder nozzle that is greater than a second cross sectional area of said discharge passageways so as to effect a peripheral pressure that is greater than the pressure at the inlet to the rotor immediately downstream of a set of fluid feeder nozzles because said fluid is compressed by passing said fluid along a curved path within a rotating hollow cavity; said rotor having heavy duty construction sufficient to withstand high rotational speeds; said rotor also including a feeding means for feeding said fluid to said rotor cavity; said feeding means being a part of said rotor and rotating with said rotor; said feeding means including

i. an inlet port disposed adjacent the center of said compressing centrifuge rotor for entrance of the fluid thereinto;

ii. at least one entry passageway connected with said inlet port for conducting said fluid interiorly of said rotor;

iii. a plurality of fluid feeder nozzles connected with said at least one entry passageway; said fluid feeder nozzles being physically connected with said rotor so as to rotate therewith and impart rotational speed to the entering said fluid, in addition to the flow velocity imparted by differential pressure; said fluid feeder nozzles being oriented and arranged to discharge said fluid forwardly in the direction of rotation of said rotating rotor and being supplied with said fluid at an elevated pressure via said inlet port;

b. a casing support for providing support for said reaction rotor;

c. a shaft journalled in said casing for supporting said reaction rotor; said shaft being connected with said rotor and rotating in unison therewith;

d. bearing means disposed about said shaft for reducing friction; and

e. fluid being flowed through said turbine stage from an inlet pressure upstream of said fluid feeder nozzles to discharge pressure downstream of said reaction discharge passageways; said inlet pressure being greater than said discharge pressure; said fluid being flowed from said feeder nozzles at a velocity greater in absolute value than the tangential velocity of said rotor at the same radial distance for effecting a greater power output on said shaft.

3,879,153

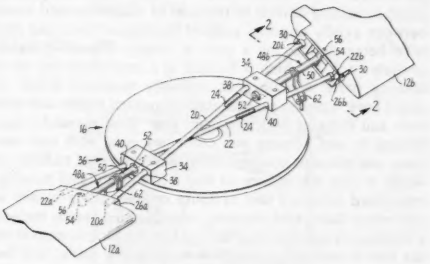
ATTACHMENT FOR ROTOR HUB AND PAIRS OF BLADES

Gerald L. Breuner, 50 Melody Ln., Orinda, Calif. 94563

Filed Jan. 7, 1974, Ser. No. 431,382

Int. Cl. B64c *27/38*

U.S. Cl. 416—141 **7 Claims**



1. In a rotating wing aircraft having a pair of rotor blades in diametrically opposed relation about a central rotor hub an attachment and control means for said blades and hub comprising,

a pair of cable means having each of their opposite ends attached to an associated pair of diametrically opposed rotor blades and extending longitudinally across the rotor hub in overlapping crossing relation,

a pair of first fixture means carried at the inner end of each of the rotor blades for rigidly attaching the respective cable ends in spaced relation along the inner ends of the rotor blades,

a second fixture means attached to the central rotor hub for supporting and carrying the cables on said rotor hub such that the blades may move relative to the hub while the cables transmit the radial load between the opposed pair of blades,

a pair of pitch control members rotatably carried between the rotor hub and the inner end of each rotor blade centrally of the cable ends,

means for rotating the pitch control members to selectively change the pitch of each blade.

3,879,154

GEAR TYPE FLUID MOTOR OR PUMP HAVING FLUID PRESSURE COMPENSATING MEANS

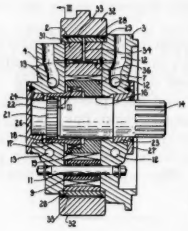
Kenneth Raymond Dixon, deceased late of Kingston Beach by Eileen M. Dixon, executrix, and David Burnett Sugden, Kingston Beach, Tasmania, Australia, assignors to Improved Mechanical Products Pty. Ltd., Habart, Tasmania, Australia

Continuation-in-part of Ser. No. 219,814, Jan. 21, 1972, abandoned, which is a continuation of Ser. No. 768,820, Oct. 18, 1968, Pat. No. 3,637,333. This application Aug. 28, 1972, Ser. No. 284,074

Claims priority, application Australia, Oct. 23, 1967, 28809/67

Int. Cl. F01c *21/00, 19/00, 1/08*

U.S. Cl. 418—71 **5 Claims**



1. A fluid motor or pump of the gear type including a housing having a major bore and at least one minor bore formed therein, the axes of the said bores being substantially parallel and being relatively disposed so that said minor bore communicates with said major bore; said housing being formed as two parts which are assembled in face to face relationship along a plane extending normal to the axes of said bores and located between axially opposite ends of the major bore; said major bore being defined by a pair of axially aligned cylindrical pockets each of which is formed in a respective one of said housing parts; a main gear rotatably mounted within said major bore; a pinion gear rotatably mounted within said minor bore and meshing with the main gear; fluid manifold means formed in said housing and communicating with said minor bore; and presure compensating means located radially outwards of said minor bore so that a portion of said housing is interposed between said pressure compensating means and said minor bore, said pressure compensating means including a continuous band located around said housing so as to overlie the line of separation between said housing parts; said band engaging each said housing part in fluid sealing relationship, and a fluid receiving chamber defined between said band and said housing parts, said pressure compensating means being arranged to receive pressurized fluid and thereby apply a radially inwardly directed force to said housing portion to minimize radially outward deflection thereof.

3,879,155

CLOSED CELL FOAM PLASTIC MOLDING APPARATUS

James W. Hendry, Louisville, Ky., assignor to Hendry Engineering, Shelbyville, Ind.

Division of Ser. No. 233,213, March 9, 1972, Pat. No. 3,806,291. This application July 24, 1973, Ser. No. 382,205

Int. Cl. B29f *3/06*

U.S. Cl. 425—4 C **8 Claims**

6. Apparatus for generating a foam-plastic material comprising in combination:

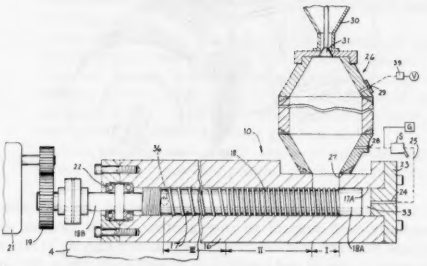
means defining a plasticizing chamber and plasticizing device contained therein for plasticizing granular plastic material introduced thereinto;

means defining a pressure-tight supply chamber having a discharge opening in pressure-tight communication with said plasticizing chamber;

means for introducing into said supply chamber a granular plastic material;

high pressure gas supply means connected to said supply chamber for permeating the granular mass therein with a high pressure gas prior to admission to said plasticizing chamber;

a foamed plasticized material outlet in said plasticizing chamber spaced downstream along said plasticizing device from said discharge opening;



backing means defined in said plasticizing chamber and by said plasticizing device upstream from said discharge opening and also connected to said high pressure gas supply means for (a) urging said plasticizing device in the downstream direction and (b) preventing escape upstream beyond said plasticizing device of gas from said discharge opening;

whereby melting of the plastic granules while permeated by said high pressure gas will arrange same around bubbles of said gas and form a plastic foam.

3,879,156

MOLDING MACHINE WITH A SAND SCRAPER

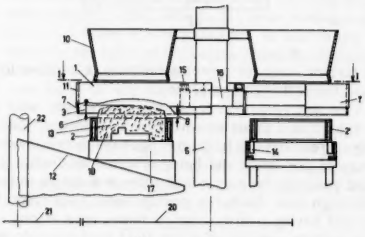
Erwin Buhrer, Vogglingasschen 40, Schaffhausen, and Franz Keller, Neuhausen a. Rheinfall, both of Switzerland, assignors to said Buhrer, by said Keller

Filed Mar. 12, 1973, Ser. No. 340,205

Claims priority, application Switzerland, Mar. 16, 1972, 3920/72

Int. Cl. B28b *13/02*

U.S. Cl. 425—218 **6 Claims**



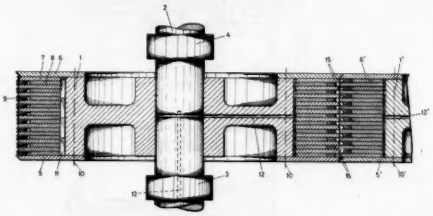
1. In a molding machine including a sandscraper, a turntable, a plurality of pattern units mounted on said turntable, and mold boxes positioned on said pattern units, so that sand filled into said mold boxes can be precompacted followed by the removal of any excess sand and then the sand finally compacted, wherein the improvement comprises a first shaft rotatably supporting said turntable for rotation in a horizontal plane, a second shaft spaced laterally from said first shaft and outwardly from the outer periphery of said turntable, means for filling sand into said mold boxes located above said mold boxes so that the sand is filled to a level extending upwardly from the upper edge of said mold boxes, at least one scraper

connected to and extending outwardly from said second shaft for rotation in a horizontal plane, the horizontal plane of rotation of said scraper being located below said filling means and above the upper edges of said mold boxes in the range to which the sand is filled into said mold boxes, a first gear connected to said first shaft, a second gear connected to said second shaft and arranged in meshed engagement with said first gear so that, as said gears rotate, said first and second shafts are rotated in opposite directions so that said scraper moves relative to said turntable and sweeps across above the tops of said mold boxes for removing sand filled into said mold boxes at a level above the upper edges of said mold boxes, and said filling means comprises a filling frame vertically displaceably mounted on said second shaft.

3,879,157
ROLLER PRESS

Theodorus Jacobus Heesen, Boxtel, Netherlands, assignor to Simon-Heesen B.V., Boxtel, Netherlands

Filed June 26, 1973, Ser. No. 373,767
Claims priority, application Netherlands, June 27, 1972, 7208848
Int. Cl. A01j *21/00*
U.S. Cl. 425—237 **15 Claims**



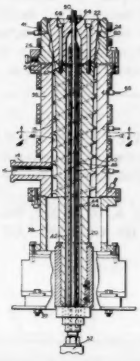
1. A roller press comprising two rollers co-operating with one another and at least one of which rollers is provided with centric grooves destined for the compressing of material, fed to the roller press, into strips, characterized in that a radially movable ring is located in each of the centric groove, the outer periphery of each of which rings forms the movable operative bottom of the groove.

3,879,158
APPARATUS FOR EXTRUDING THERMOPLASTIC ANNULAR SHAPES

Enrique Schele, Calle Norte 3 No. 90-C, Mexico 9, D.F., Mexico

Filed Jan. 9, 1973, Ser. No. 322,172
Int. Cl. B29d *23/04*
U.S. Cl. 425—380 **6 Claims**

1. A screw-die extruder for producing annular extrudate characterized by uniformity of wall thickness, said screw-die extruder comprising a housing in which is provided at least one entry for the introduction entry of thermoplastic material from a feed extruder, a pressure generating screw rotatably mounted within said housing, said screw being connected to a rotary drive means, a die pin fixedly connected to the discharge end of said screw, a stationary die bushing mounted on said housing, encompassing said die pin to define an annular orifice in which said die pin rotates at the same rate as said screw, an axially located passageway extending through the length of said screw die extruder with two coaxial tubes of different diameters having a spaced relationship between them being mounted coaxially within said passageway such that three concentric passageways are formed, the outertube having a plurality of vents through its wall, the central of said passageways connecting to an axial passageway through said die pin and connected at its other end to an air source, the second passageway, defined by the spacing between said two coaxial tubes, being sealed at its forward end at the die pin and connected at its other end to a coolant source, the third of said passageways, defined between said outer coaxial tube and the wall of the axial passageway through the screw, being sealed

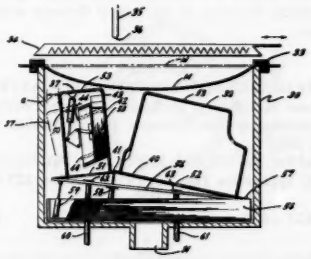


at said die pin and connected at its other end to a conduit for removal of said coolant passing from the second passageway through said vents.

3,879,159
METHOD AND APPARATUS FOR FORMING ARTICLES FROM PLASTIC SHEET MATERIAL

Robert J. Smith, 1217 Charleston East Dr., Indianapolis, Ind. 46219

Division of Ser. No. 384,636, Aug. 1, 1973. This application May 6, 1974, Ser. No. 466,954
Int. Cl. B29c *17/04*
U.S. Cl. 425—388 **6 Claims**



1. In apparatus for forming a deep-drawn, unitary, plastic article comprising a pair of adjacent walled structures having unidirectionally presented openings, said apparatus being of the type including a pair of spaced, unidirectionally presented molds having outer surface portions corresponding to the shape of the article to be formed, an assist-plug structure at least a portion of which is insertable into the space between said unidirectionally presented molds, means for supporting a heat-softened, unitary sheet of thermoplastic material between said molds and said assist-plug structure, means for effecting relative movement between said molds and said assist-plug structure to cause them to bear against said sheet, and means for producing a pressure differential across opposite surfaces of each of said molds, the improvements comprising: means for movably mounting said said molds so that in one position thereof confronting mold wall sections are closely spaced, and in another position said wall sections are substantially spaced; table structure supporting said movable molds and mounted for tilting movements from a substantially

horizontal position about an axis extending transversely of the direction of movements of said molds; means for maintaining said molds in said other, substantially spaced position, and said table structure in its upwardly tilted position, as said molds and said assist-plug are moved together against said sheet; and means for moving said molds to said one, closely spaced position and said table structure to its horizontal, non-tilted position prior to operation of said means for producing the recited pressure differential.

3,879,160

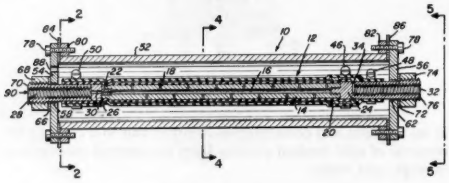
ISOSTATIC CURING APPARATUS

Donald Miller, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1974, Ser. No. 495,178

Int. Cl. B30b *5/02*

U.S. Cl. 425—405 H **7 Claims**



1. An isostatic curing apparatus which comprises:

hollow mandrel means for supporting a reinforced composite laminate wrapped thereon;

housing means for holding said mandrel means therein, and for subjecting said mandrel means to fluid pressure;

flexible sleeve means for simultaneously transmitting internal and external pressure to said laminate;

fluid means for exerting pressure on said sleeve means; and

clamping means for holding said sleeve means to said mandrel means while permitting entrapped gases in said composite laminate to be vented through said mandrel means.

3,879,161

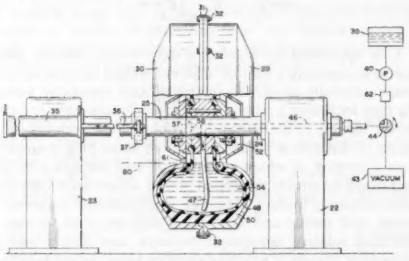
APPARATUS FOR CENTRIFUGAL CASTING

Daniel Ross McGillvary, Jackson Township, Stark County, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 159,893, July 6, 1971, Pat. No. 3,751,551. This application Jan. 26, 1973, Ser. No. 327,041

Int. Cl. B29c *5/04*

U.S. Cl. 425—435 **11 Claims**



1. Apparatus for centrifugally casting an article including in combination a mold, means for rotating said mold, a hollow flexible core mounted within said mold which core is deformable under pressure but has sufficient memory to resume its original position when the pressure is removed, a curable liquid material in the space between the core and mold which material is to form the finished article, a stabilizing liquid material in said hollow core, said material of construction of said core, said curable liquid material and said stabilizing liquid material all having substantially the same specific gravity.

3,879,162

APPARATUS FOR MOULDING LOLLIPOPS

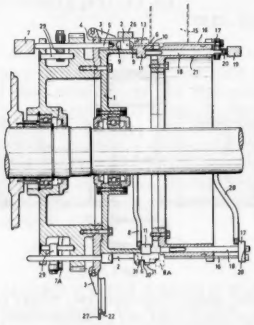
Conrardus Hubertus Aquarius, 13, Weert, Kanaalstraat, Netherlands

Filed Apr. 13, 1973, Ser. No. 350,736

Claims priority, application Netherlands, Apr. 18, 1972, 005212

Int. Cl. A23g *3/12*

U.S. Cl. 425—517 **3 Claims**



1. In an apparatus for moulding lollipops from a continuously fed string of sugar, which comprises a moulding drum, a central shaft about which the drum is rotatable, the moulding drum having a peripheral face defining a series of recesses distributed annularly over the peripheral face, two annularly arranged series of moulding dies positioned on the peripheral drum face on either side of the recesses, respective pairs of the moulding dies defining a moulding cavity with an associated one of the recesses, the moulding dies being reciprocable into and out of the associated recesses in a direction parallel to the shaft, a supply of lollipop sticks, and a mechanism positioned at the peripheral drum face for inserting, during rotation of the drum, one end of successive lollipop sticks received from the supply into successive moulding cavities through a longitudinal passage extending parallel to the shaft in each of the moulding dies of one series of dies and opening into the moulding cavity: the moulding dies of the one series each having a peripheral wall defining a radial slot constituting the longitudinal passage, and further comprising a single plate part fitting into, and movable into and out of, an associated one of the slots, the plate part being dimensioned to leave free a portion of the slot sufficient to permit insertion of the lollipop stick therethrough when the plate part has been moved into the slot and thus closes the moulding cavity, and the length of the slot being such that, after the plate part has been moved out of the slot, a moulded lollipop together with the lollipop stick inserted thereto is removable from the moulding cavity in a radial direction after the moulding die of the one series has been retracted only over a distance necessary to release the sugar part of the lollipop from the moulding die.

3,879,163

LIGHTER ASSEMBLY

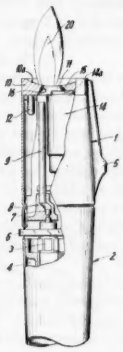
David John Wright, Brockham, Betchworth, England, assignor to Ronson Products Limited, Leatherheas, Surrey, England

Filed Mar. 20, 1974, Ser. No. 453,089

Claims priority, application United Kingdom, Mar. 26, 1973, 14520/73

Int. Cl. F23q 2/30

U.S. Cl. 431—267 5 Claims



1. A lighter assembly comprising, in combination, means for storing a primary fuel, means for storing a secondary fuel adapted to ignite said primary fuel upon admixture therewith, means defining an ignition point directing said primary and secondary fuels into convergent paths, and means for delivering said primary and secondary fuels to said directing means, said directing means comprising a member having an ignition orifice defined therethrough and a pair of oppositely sloped surface areas converging toward said orifice, said pair of surface areas extending from over at least a portion of the periphery of said orifice, said delivering means being arranged to cause said delivered primary fuel to impinge one of said surface areas and said secondary fuel to impinge the other of said surface areas.

3,879,164

METHOD OF ISOTHERMALLY HEATING ARTICLES WITH RADIATION

Peter Haldopoulos, Naperville, and Yemmanur Jayachandra, Bolingbrook, both of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Continuation of Ser. No. 365,318, May 30, 1973, abandoned. This application July 11, 1974, Ser. No. 487,689

Int. Cl. F26b 3/28

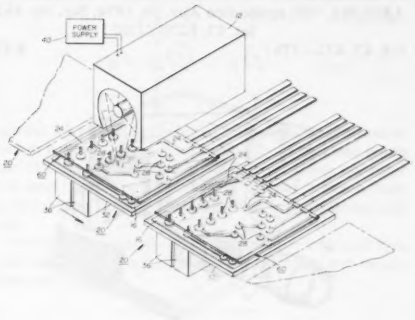
U.S. Cl. 432—10 5 Claims

1. In a method of isothermally heating a surface of an article, areas of the surface having varying heating characteristics in response to irradiation:

projecting a beam of radiant energy across the surface of the article;

imparting relative movement between the radiant heat beam and the article to scan and heat the surface of the article with the beam, and

filtering the radiation in the beam scanned across the surface of the article to selectively decrease the intensity of the radiant energy impinging on areas of the surface to



heat each area of the surface to the same temperature to isothermally heat the surface of the article.

3,879,165

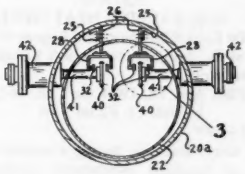
VACUUM ELECTRIC FURNACES

Benjamin A. Kreider, Richboro; William J. Metalsky, Warminster, and Edward N. Cyrway, Jr., Levittown, all of Pa., assignors to Abar Corporation, Feasterville, Pa.

Filed Apr. 22, 1974, Ser. No. 462,961

Int. Cl. F27b 9/14

U.S. Cl. 432—121 14 Claims



1. In a vacuum electric furnace having an elongated furnace chamber with an interior heat reflective shield and heating elements disposed within the reflective shield, the improvement which comprises

spaced parallel longitudinal track rails within the chamber and interiorly of the heating elements,

members for supporting said longitudinal track rails,

said connecting members between supporting members and said track rails accommodating longitudinal expansion and contraction of said track rails upon changes of temperature within said chamber,

a carrier for work pieces having spaced supporting elements supported by said track rails,

said carrier having a pair of spaced elongated longitudinal frame members of predetermined length less than that of the furnace chamber and drive members carried thereon, and

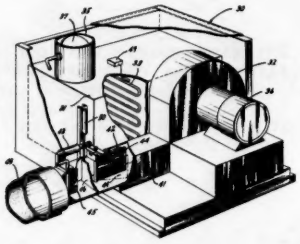
driving members extending interiorly of said shield in driving engagement with said drive members on said carrier for advancing said carrier within said furnace chamber.

3,879,166

APPARATUS FOR HEATING MOLDING MATERIALS

Charles R. Wright, Connersville, Ind., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Division of Ser. No. 361,344, May 17, 1973, Pat. No. 3,838,962. This application Apr. 19, 1974, Ser. No. 462,354
Int. Cl. F27b *17/00*
U.S. Cl. 432—176 **6 Claims**



1. For use with apparatus for vacuum-forming a deep-drawn article from a heat-softened sheet of thermoplastic material, means for billowing such a sheet of material prior to the forming operation comprising: blower means having an inlet and an outlet and operable to supply air under positive pressure to billow said sheet of thermoplastic material; heater means disposed to heat said air moved by said blower means; and air diverter means selectively operable either to direct substantially full flow of air discharged by said blower means over said heater means and then to said inlet of said blower means, or to direct a first portion of the air discharged by said blower means to one side of said softened sheet to billow the same and the remaining portion of the air discharged by said blower means over said heater means and then to said inlet of said blower means.

3,879,167

NON-WARPING HEAT SHIELD

Norman C. De Luca, Glenshaw, and Eugene A. Mizikar, Clairton, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

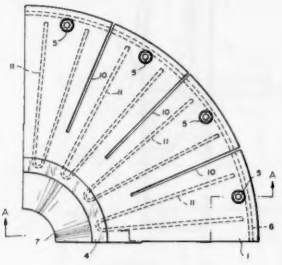
Filed Apr. 18, 1974, Ser. No. 461,814
Int. Cl. F23m *9/00*
U.S. Cl. 432—249 **6 Claims**

1. A heat shield assembly having a central opening for the prevention of localized overheating during batch heat-treatment of coils, comprising:

a. a first substantially circular plate having a central opening and containing multiple radial slots whereby thermal warpage of said first plate would be minimized upon heating and cooling during said heat-treatment;

b. a second substantially circular plate having a central opening and containing multiple radial slots whereby thermal warpage of said second plate would be minimized upon heating and cooling during said heat-treatment;

c. a first fastening means in contact with said first and second plates at a position proximate to said respective central openings of said first and second plates for loosely fastening said first and second plates so as to permit said first and second plates to expand and contract independently upon heating and cooling;



d. a second fastening means in contact with said first and second plates at an outer radial position of said first and second plates for loosely fastening said first and second plates so as to permit said first and second plates to expand and contract independently upon heating and cooling;

e. insulating material located between said first and second plates; and

f. spacing means located between and in contact with said first and second plates so as to prevent the crushing of said insulating material and to maintain dimensional stability of said heat shield assembly.

3,879,168

MANUFACTURE OF ALGINIC MATERIAL

Kenneth John Franklin, Harrow, and Keith Bates, Pinner, both of England, assignors to Medical Alginates Limited, Perivale, Middlesex, England

Division of Ser. No. 203,039, Nov. 29, 1971. This application Feb. 20, 1973, Ser. No. 333,991

Int. Cl. D06c *27/00*

U.S. Cl. 8—115.5 **13 Claims**

1. A method of preparing partially soluble alginic material in the form of gauze or wool suitable for the preparation of surgical dressings and having an alginic acid substrate partially neutralized by calcium and an alkali metal giving a calcium content within the range 2 to 6 percent by weight and a reaction pH within the range of about 4 to slightly less than 7 comprising the steps of:

subjecting a calcium form of the alginic material to a treatment with acid predetermined to replace part of the calcium yielding a product having a calcium content of 2 to 6 percent by weight and subsequently to a treatment with an alcoholic solution of an alkali selected from the group consisting of sodium and potassium hydroxide predetermined to neutralize sufficient of the alginic acid to provide a product having a reaction pH approximately within the desired range of about 4 to slightly less than 7, obtaining a measure of the reaction pH of the resulting product, and

as and if necessary, adding acid or alkali to said alcoholic alkali in contact with the product in increments until a measure of the reaction pH indicates a value of reaction pH within the range of about 4 to slightly less than 7.

3,879,169

INTRODUCTION OF A TEMPORARY STIFFNESS INTO KNITTED COTTON FOR STABILITY DURING PATTERNING

John G. Frick; Bethlehem K. Andrews, both of New Orleans, and Gloria A. Gautreaux, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 17, 1973, Ser. No. 351,935

Int. Cl. D07m *13/12*

U.S. Cl. 8—115.6 **3 Claims**

1. A method of imparting temporary firmness and stability to knitted cellulosic fabrics intended for post-cured durable-press goods, said temporary firmness and stability facilitating the cutting and shaping or forming of patterned knitted fabric during the stage of processing between initial impregnation and the curing step, said curing step occurring post-fabrication, without affecting the desired degree of final stiffness, the method comprising impregnating the cellulosic knitted fabric with an aqueous solution containing a crosslinking agent and its catalyst, drying the wet impregnated fabric, spraying a temporary sizing solution to a dry-weight pickup of about from 1 to 3% without saturating said fabric, submitting the treated knitted cellulosic fabric to fabrication, and curing the fabricated material.

3,879,170

METHOD OF ACID DYEING POLYESTER FIBERS

Yves Vaginay, Lyon, France, assignor to Rhone-Poulenc-Textile, Paris, France

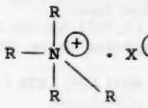
Filed Dec. 15, 1972, Ser. No. 315,582

Claims priority, application France, Dec. 23, 1971, 71.46680

Int. Cl. D06p *5/00*

U.S. Cl. 8—168 **9 Claims**

1. In the method of dyeing polyester fibers, the improvement comprising using as said fibers a polyester composition comprising polyesters of at least one dihydric alcohol and at least one aromatic dicarboxylic acid, said polyesters containing 1 to 10% of units with respect to the sum of the recurring units of the polymer issuing from a product having the formula



(I)

wherein the R's represent aliphatic, cycloaliphatic or aromatic radicals, at least one R being substituted by at least one group capable of forming ester bonds with the recurring polyester units, at least two R's being capable of forming between them a ring which may contain quaternizable nitrogen atoms; and wherein

X^- is a halogen atom, and treating said fibers with acid dyes selected from the group consisting of simple and metallized acid dyes.

3,879,171

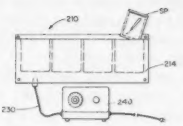
ELECTRIC HEATING ASSEMBLY FOR STERILANT PACKAGES

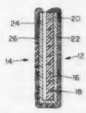
Jerry J. Tulis, Raleigh, N.C., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Filed Sept. 17, 1973, Ser. No. 397,761

Int. Cl. A61l *3/00;* **H05b** *3/06*

U.S. Cl. 21—91 **1 Claim**





1. A heater for sterilant packages, comprising:

a heat insulating member having a generally U-shaped cross section defining first and second facing legs which are spaced from each other, the first leg defining a heat insulating front wall and the second leg defining a heat insulating back wall;

a flexible insulating material covering the interior of the heat insulating back wall and spaced from the heat insulating front wall, said back wall, said flexible insulating material and said front wall being connected to each other at spaced intervals over the length thereof to define a plurality of adjacent separate spaced pockets in a single plane, having separate openings for receiving sterilant packages;

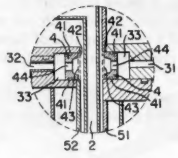
an electrical heating element embedded and electrically insulated in the flexible insulating material to provide for heating of the sterilant packages in the pockets; and

an exterior electrical supply means connected to the electrical heating element for supplying electrical potential to the electrical heating element, said electrical supply means including a thermostat for controlling the electrical potential.

3,879,172
SULFONATION DEVICE CAPABLE OF FORMING UNIFORM FILM OF FEED MATERIAL

Sadao Toyoda; Toshiaki Ogoshi, both of Funabashi, and Minoru Maruyama, Soka, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,662
Claims priority, application Japan, Sept. 18, 1971, 46-72829
Int. Cl. B01j *1/00*; **C07b** *13/06*
U.S. Cl. 23—284 **11 Claims**



1. An apparatus for continuously reacting a reactant liquid with reactant fluid, in which a film of the reacting liquid is continuously flowed downwardly along elongated reaction surface means in contact with concurrently flowing reactant fluid, comprising;

a reactor comprising two concentric, vertically extending walls which are radially spaced from each other to define an annular reaction zone with the opposing surfaces of said walls defining two opposing reaction surfaces; an annular nozzle disposed between said surfaces for feeding said reactant fluid to the upper end of said reaction zone; feeding means for feeding said liquid to the upper end of said reaction zone, said feeding means being separate from said nozzle, said feeding means comprising means mounted on said reactor and defining a chamber for containing said liquid, said chamber being open along one side thereof adjacent to the upper end of one of said reaction surfaces, woven net means extending completely across the open side of said chamber and having uniformly arranged small openings therethrough, said openings having an effective size of 5 to 90 μ, whereby the liquid passes from the chamber through said openings and flows onto the upper portion of one of said reaction surfaces and moves downwardly thereon as a thin film of substantially uniform thickness.

3,879,173
CRYSTALLISER FOR CONTINUOUSLY OBTAINING OF CRYSTALS

Gerbertus H. de Vries, Grondherenstraat 6, Rotterdam, and Gerrit C. de Bruyn, Binkschotenlaan 242 5r; B200 Borgerhout, Antwerpen, both of Belgium

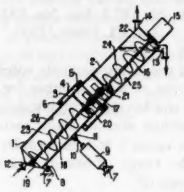
Continuation-in-part of Ser. No. 61,636, Aug. 6, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,411
Claims priority, application Netherlands, Sept. 26, 1969, 6914626
Int. Cl. B01j *17/00*, *17/20*
U.S. Cl. 23—301 R **4 Claims**

1. A method of growing crystals from mother liquor, which comprises the steps of:

a. forming an elongate, unidirectionally flowing liquid column by continuously introducing saturated mother liquor containing seed crystals into the lower end of an elongate vessel while continuously withdrawing saturated mother liquor containing grown crystals and vapor separately from the upper end of the vessel;

b. controlling the temperature of the entering mother liquor, the height of the liquid column and the pressure of vapor withdrawal such that the entering mother liquor boils and boiling continues throughout the liquid column uniformly to maintain supersaturation of the mother liquor and progressive growing of the seed crystals;

c. transporting the growing crystals cocurrently with the mother liquor by rotating a helical auger within said liquid column; and

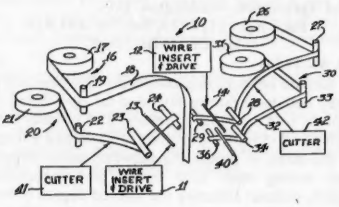


d. controlling the rotational speed of said auger with respect to the flow rate of mother liquor in said column such that the growing crystals are transported at said flow rate and whereby movement of said mother liquor is effected by said auger only transverse to the flow path from the lower to the upper end of said vessel.

3,879,174
METHOD AND APPARATUS FOR FORMING METALLIZED FILM CAPACITORS

John Phillip Uhl, Arlington, Va., and Ki Hong Kim, Poway, Calif., assignors to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 440,495, Feb. 7, 1974. This application July 17, 1974, Ser. No. 489,347
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **11 Claims**



1. Apparatus for forming a metallized film capacitor, comprising: first and second wire positioning and rotating means for placing a pair of conductive lead wires in parallel spaced relation to one another, metallized film support means to deliver one end of a length of metallized film between said pair of conductive lead wires, metal foil transport means to position a pair of metallic foils of predetermined lengths on opposite sides of the metallized film near said one end thereof to make electrical contact between the metallized film and the respective pair of conductive lead wires, dielectric transport means to place one end of a length of dielectric material over said one end of said metallized film and one of said predetermined lengths of metallic foil, and drive means for rotating said pair of conductive lead wires about an axis therebetween to wrap said metallized film, said predetermined lengths of metallic foil and said dielectric material, whereby a metallized foil wound capacitor of a given value is formed by a predetermined number of revolutions of said pair of lead wires.

3,879,175

BEARING BODIES AND METHODS OF FORMING BEARING SURFACES

Charlie Maurice Levitt, Johannesburg, South Africa, assignor to De Beers Industrial Diamond Division Limited, Johannesburg, South Africa

Division of Ser. No. 156,427, June 24, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 355,200

Int. Cl. B22f *1/00*

U.S. Cl. 29—182.5 10 Claims

1. A hard-wearing bearing body composed of a series of closely packed, originally round, hard particles that touch each other at points defining equatorial planes substantially parallel to the bearing surface, the particles being bonded together by a solid matrix with the tops of the particles cut away to latitudes approaching said equatorial planes, the material of the particles being harder than the material of the matrix and the cut-away tops of the particles defining said bearing surface.

3,879,176

LIQUEFIED PETROLEUM GAS COMPOSITIONS

Masaaki Tsunemi, Kawasaki, Japan, assignor to Nippon Oil Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 205,745, Dec. 7, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 390,112

Claims priority, application Japan, Dec. 11, 1970, 45-109734

Int. Cl. C10l *1/14*

U.S. Cl. 44—52 9 Claims

1. A liquefied petroleum gas composition containing 1–500 ppm, based on the liquefied petroleum gas, of at least one carboxylic acid ester boiling at a temperature above 200°C. and which is liquid at ambient temperature, said carboxylic acid ester being selected from the group consisting of (a) the ester of an aromatic carboxylic acid and a 1–8 carbon atom aliphatic alcohol, (b) the ester of a 2–18 carbon atom aliphatic monocarboxylic acid and a 1–10 carbon atom aliphatic alcohol, (c) the ester of a 2–18 carbon atom aliphatic monocarboxylic acid and a 2–3 carbon atom aliphatic polyhydric alcohol, (d) the ester of a 3–10 carbon atom polybasic carboxylic acid and a 1–10 carbon atom aliphatic alcohol, and (e) the ester of a 3–10 carbon atom polybasic carboxylic acid and a 2–3 carbon atom aliphatic polyhydric alcohol.

3,879,177

INHIBITION OF WAX CRYSTALLIZATION

Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,883

Int. Cl. C10i *1/14, 1/22*

U.S. Cl. 44—62 12 Claims

1. In a process for the production of a waxy crude oil from a subterranean formation through a well leading from said formation to the surface of the earth, the step for inhibiting crystallization of wax from said waxy crude oil comprising mixing with said waxy crude oil in said well about 6 to 2500 parts per million by weight of an agent prepared by esterifying a copolymer of maleic anhydride and vinyl methyl ether with docosanol.

3,879,178

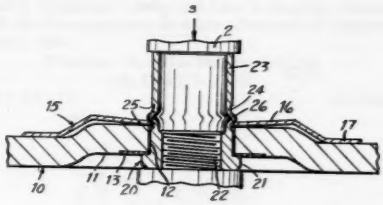
DISCARD MOUNT FOR DISC TYPE GRINDING WHEEL

Robert W. Bosma, Northbridge, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 375,845, July 2, 1973, abandoned. This application July 30, 1973, Ser. No. 383,481

Int. Cl. B24b *45/00*

U.S. Cl. 51—168 6 Claims



1. A disc type grinding wheel with a disposable mount permanently attached thereto, said mount comprising

a hollow elongated cylindrical body symmetrical about a central axis and extending through a central hole in said grinding wheel, including

a radially enlarged flange adjacent one end thereof,

a tubular portion of predetermined wall thickness adjacent to the other end thereof, and

a lengthwise section of said tubular portion of a relatively reduced wall thickness to facilitate forming a pleat therein, and disposed at a predetermined location lengthwise of said tubular portion such that a pleat with a conical surface formed therein constrains said grinding wheel, and of a predetermined limited length such that a pleat with a conical surface formed therein must be formed perpendicular to the central axis of said cylindrical body, said lengthwise section being bowed outwardly by displacement of said tubular portion a predetermined distance toward said radially enlarged flange to form a radially outwardly extending pleat with a conical surface effective to constrain the body of said mount radially thereof and effective in combination with said radially enlarged flange to secure the body of said mount lengthwise thereof to said grinding wheel.

3,879,179

METHOD AND APPARATUS FOR HANDLING DUST SEPARATED FROM GASES

Charles R. Chinnock, and James B. Kaminski, both of Buffalo, N.Y., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed Jan. 25, 1974, Ser. No. 436,622

Int. Cl. B01d *46/00*

U.S. Cl. 55—1 49 Claims

1. Apparatus for collecting dry dust and handling the same comprisinsg

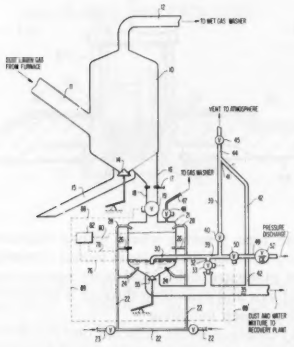
a. chamber means for separating dust from gas under superatmospheric pressure,

b. means for supplying water,

c. means for mixing dust with water including holding receptacle means for holding the resulting slurry of dust and water,

d. conduit means connecting the chamber means with the holding receptacle means for conducting dust from the chamber means to the holding receptacle means and imposing the superatmospheric gaseous pressure of the chamber means on the surface of the body of slurry in the holding receptacle means, the conduit means being the sole means of access of dust to the holding receptacle means above the surface of the body of slurry in the holding receptacle means,

e. valve means for opening and closing the conduit means,
f. slurry withdrawal conduit means connected to the holding receptacle means at a point near the lower end of the holding receptacle means, the slurry withdrawal conduit means including an upwardly extending portion extending to a point above the highest possible level of the body of slurry in the holding receptacle means and being open to the atmosphere at that point,



g. overflow means connected to the upwardly extending portion of the slurry withdrawal conduit at said point for collecting slurry passing through the slurry withdrawal conduit and past said point,
h. conduit means connected to the overflow means for passing slurry from the overflow means to a slurry processing apparatus, and
i. shut-off valve means for closing slurry withdrawal conduit means (f) below said point.

3,879,180

METHOD FOR TREATING A GAS CURRENT WHICH IS OBTAINED BY COAL GASIFICATION

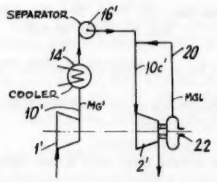
Jochen Hutgens, Duisburg-Hamborn, and Günter Adomat, Essen, both of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Oberhausen, Germany

Filed Dec. 18, 1972, Ser. No. 315,982

Claims priority, application Germany, Dec. 18, 1971, 2163096

Int. Cl. B01d *45/00*

U.S. Cl. 55—83 **1 Claim**



1. A method of treating gas current attained from coal by gasification, comprising compressing the gas in several stages, removing the gas from one of said stages and, prior to its entrance into a subsequent stage, cooling at least a portion of the gas and separating the liquid therefrom, and collecting leakage gas from a subsequent compression stage and subsequently heating the cooled and separated gas before it is delivered to the next stage by contacting it with the leakage gas.

3,879,181

GAS CHROMATOGRAPH, SPECIMEN CAPSULE FOR USE THEREIN AND PROCESS FOR GAS CHROMATOGRAPHY

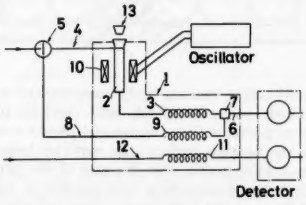
Sigeru Nakamura; Mitsuru Taguchi, both of Yokohama; Satoru Naniwada, and Naoki Ohguri, both of Tokyo, all of Japan, assignors to Show Denk Kabushiki Kaisha and Japan Analytical Industry Co., both of Tokyo, Japan

Filed Mar. 2, 1973, Ser. No. 337,712

Claims priority, application Japan, Mar. 9, 1972, 47-24250; Mar. 9, 1972, 47-24251; May 8, 1972, 47-44583

Int. Cl. B01d *15/08*

U.S. Cl. 55—197 **1 Claim**



1. A gas chromatograph comprising in combination:
A. a constant temperature oven;
B. a carrier gas introducing pipe;
C. a vaporizer having an entrance for sending a sample thereinto, to which said carrier gas introducing pipe is connected within said constant temperature oven for vaporizing said sample and for mixing the resultant vapor with the carrier gas introduced from said introducing pipe and means for discharging the mixed gas out of said vaporizer;
D. an analyzing column disposed inside said constant temperature oven next to said vaporizer and having a column packing therein for receiving mixed gas discharged from said vaporizer, separating the sample into components by means of said column packing and means for sending said components outside said analyzing column one after another;
E. a tee coupling disposed inside said constant temperature oven next to said analyzing column;
F. a three-way valve disposed at said carrier gas introducing pipe and outside said constant temperature oven, said three-way valve having an entrance for receiving carrier gas and two exits, one for sending the carrier gas in the direction of said vaporizer and the other for sending the carrier gas in another direction, and capable of being switched in either direction;
G. a system having a dummy column within said constant temperature oven by which said tee coupling and three-way valve are connected with each other;
H. a detector disposed outside said constant temperature oven to which said tee coupling is connected for detecting the components sent from said analyzing column; and
I. a system having a reference column within said constant temperature oven.

3,879,182

METHOD OF MAKING MINATURE PRISMS

Richard R. Strack, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 4, 1974, Ser. No. 438,989

Int. Cl. C03b *11/08*; **C03c** *19/00*; **C03b** *23/00*

U.S. Cl. 65—37 **10 Claims**

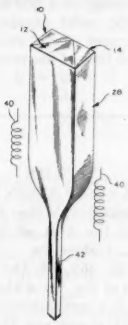
1. The method of making a wavelength multiplexing prism comprised of a plurality of glass elements having flat light-refracting faces fused together in a prearranged geometrically patterned interfacial relationship for controllably dispersing

light passing in one direction therethrough, said method comprising the steps of:

constructing from stock glasses an oversized preform of each element of the prism to be produced, said preforms having surfaces which correspond in shape to those of said light-refracting faces desired of said prism;

grinding and polishing said surfaces of said preforms;

assembling the preforms with said ground and polished surfaces thereof tightly juxtapositioned in a geometrically patterned relationship which corresponds to the geometrical patterning desired of said faces in said prism;



heating one end of the assembly of said preforms to a temperature suitable for fusing said surfaces of said preforms together and for drawing said assembly;

drawing the assembly as a unit in a direction longitudinally of said juxtapositioned surfaces of said preforms into a section of reduced cross-sectional size to fuse said surfaces together as said light-refracting faces of said prism; and

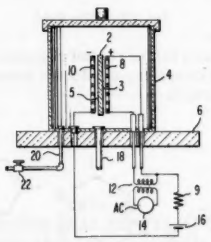
transaxially cutting from said drawn section of said assembly a short portion of its length; said portion comprising said prism.

3,879,183

CORONA DISCHARGE METHOD OF DEPLETING MOBILE IONS FROM A GLASS REGION

David Emil Carlson, Yardley, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 15, 1973, Ser. No. 388,436
Int. Cl. C03c *23/00*
U.S. Cl. 65—30 **7 Claims**



1. A method of depleting mobile alkali metal ions from a surface region of a glass body comprising

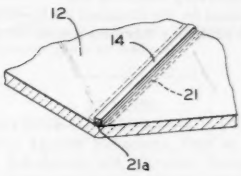
disposing opposite surfaces of said body between but not physically contacting anode and cathode electrodes, and establishing a corona discharge between at least one of said electrodes and said body, while heating said body at a temperature less than the deformation temperature of the glass for a time sufficient to cause alkali metal ions on the side of the body adjacent the anode to migrate toward the cathode without the introduction of other ions into the surface region.

3,879,184

PROCESS FOR TREATING A GLASS SHEET BENT TO A RELATIVELY SHARP ANGLE

Harold E. Hamilton, Toledo, and Ivan L. Soreghy, Swanton, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Jan. 31, 1974, Ser. No. 438,234
Int. Cl. C03b *23/02*
U.S. Cl. 65—107 **10 Claims**



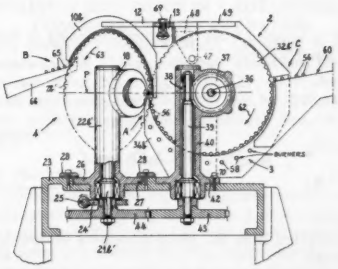
1. A process for treating a glass sheet adapted to be bent to a relatively sharp angle comprising; applying a band of coloring agent to at least one surface of the sheet along the line about which it is desired to bend the sheet; superimposing a layer of electrically conducting material on said band lengthwise thereof to form an electrically conductive path; applying an electrical potential across said path of a sufficient magnitude and for a time adequate to heat the sheet in the area immediately adjacent said path to a temperature above the bending point of the glass causing said sheet to bend along said line and forming a stain therealong of desired appearance.

3,879,185

APPARATUS FOR LENGTHENING CYLINDRICAL WORKPIECES

Maurice Sade, Lyon, France, assignor to Comptoir Lyonnais de Verrerie, Rhone, France

Filed Oct. 29, 1973, Ser. No. 410,383
Int. Cl. C03b *23/04*
U.S. Cl. 65—279 **9 Claims**



1. An apparatus for lengthening cylindrical workpieces of a thermally softenable material, comprising:

stretching means and conveying means for transferring the workpieces to said stretching means;

said conveying means including a pair of parallel rotatable feed members provided with equispaced peripheral notches engageable with respective extremities of a succession of said workpieces;

heating means between said feed members for thermally softening the midportions of the workpieces so engaged; said stretching means including a pair of rotatable stretching members provided with equispaced peripheral notches engageable with said extremities, said stretching members having their peripheries located in respective planes of rotation which diverge in opposite directions from a central plane parallel to said feed members, the peripheries of said stretching members approaching the peripheries of said feed members at a transfer point for gripping the extremities of the thermally softened workpieces and progressively separating said extremities while advancing said workpieces with their axes moving along part of an imaginary cylinder surface having a centerline transverse to said central plane;

drive means for coordinatedly rotating said feed members and said stretching members; and

unloading means for the stretched workpieces at a location along said stretching members remote from said transfer point.

3,879,186

GROWTH CONTROL OF TURF

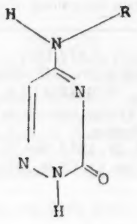
Lawrence S. Wittenbrook, Marysville, Ohio, assignor to O. M. Scott & Sons Company, Marysville, Ohio

Filed June 22, 1973, Ser. No. 372,600

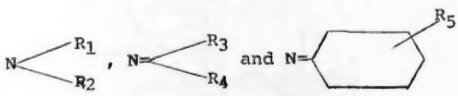
Int. Cl. A01n *9/22*

U.S. Cl. 71—76 **7 Claims**

1. A process for inhibiting the growth of turf comprising applying to the turf a growth inhibiting amount of a compound of the formula



where R is selected from the group consisting of hydrogen, methyl, ethyl furfuryl,



in which

R_1 is selected from the group consisting of hydrogen and methyl;

R_2 is selected from the group consisting of hydrogen, phenyl, acetyl and propionyl when R_1 is hydrogen and R_2 is methyl when R_1 is methyl;

R_3 is selected from the group consisting of hydrogen and C_1–C_6 alkyl;

R_4 is selected from the group consisting of C_1–C_6 alkyl, phenyl and C_1–C_3 carboalkoxy; and

R_5 is selected from the group consisting of hydrogen and C_1–C_6 alkyl.

3,879,187

BIOLOGICALLY ACTIVATING COMPOSITION

Kunio Hata; Kingo Yokota; Yoshio Tsutsui, all of Akita, and Shoji Yamashita, Aichi, all of Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1971, Ser. No. 199,047

Int. Cl. A01n *21/02*

U.S. Cl. 71—77 **5 Claims**

1. A composition for promoting the growth of plants comprising a mixture of a α-tocopherol and ubiquinone in a mol ratio ranging from about 1:19 to about 7:3, said mixture being dispersed in water in the presence of a liquid medium selected from the group consisting of a non-ionic surfactant and a hydrophilic nucleophilic, polar, organic solvent in a concentration of each component of said mixture ranging between 10^{-15} to 10^{-12} mols per liter of the resultant dispersion.

3,879,188

GROWTH REGULATION PROCESS

Charles D. Fritz, Philadelphia; Wilbur F. Evans, Springhouse, and Anson R. Cooke, Horsham, all of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation of Ser. No. 869,386, Oct. 24, 1969, which is a continuation-in-part of Ser. No. 693,698, Dec. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 617,860, Feb. 23, 1967, abandoned. This application Jan. 20, 1972, Ser. No. 219,538

Int. Cl. A01n *9/36*

U.S. Cl. 71—86 **65 Claims**

1. The method of hastening ripening in unpicked fruit which comprises applying to the unpicked fruit, an effective but non-phytotoxic amount of 2-chloroethyl-phosphonic acid in order to hasten ripening

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3,879,189

CONTROL OF WEEDS WITH 1-PHENYL-4-PHOSPHORANYLIDENEAMINO-5-HALO-6(1H)-PYRIDAZONES

Joerg Bader, Arlesheim, and Christian Vogel, Benningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

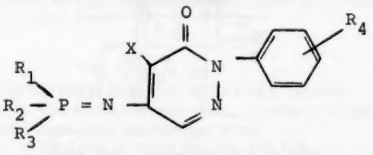
Division of Ser. No. 206,172, Dec. 8, 1971, Pat. No. 3,823,142. This application May 2, 1974, Ser. No. 466,329

Claims priority, application Switzerland, Dec. 15, 1970, 18554/70

Int. Cl. A01n *9/36*

U.S. Cl. 71—86 **12 Claims**

1. A composition for the control of gramineous and dicotyledenous weeds comprising an effective amount of (1) a compound of the formula



wherein R_1, R_2 and R_3 are identical and represent alkoxy, chloroalkoxy or alkylthio in which the alkyl moieties have from 1 to 4 carbon atoms; R_4 represents hydrogen or trifluoromethyl; and X represents chlorine or bromine; and (2) an inert carrier.

3,879,190

HERBICIDAL ALLOPHANIMIDATES

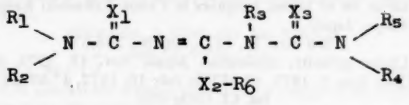
Julius Jakob Fuchs, 1104 Greenway Rd., Wilmington, Del. 19803

Continuation-in-part of Ser. No. 256,254, May 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 181,203, Sept. 16, 1971, abandoned. This application July 3, 1972, Ser. No. 268,768

Int. Cl. A01n 9/12

U.S. Cl. 71—98 4 Claims

1. A method for the control of undesired vegetation comprising applying to the locus of such undesired vegetation a herbicidally effective amount of a compound of the formula:



wherein:

R_1, R_2, R_4, and R_5 are each independently selected from the group consisting of hydrogen; alkyl of 1 through 8 carbon atoms; alkenyl of 3 through 4 carbon atoms; cycloalkyl of 3 through 8 carbon atoms; cycloalkenyl of 5 through 8 carbon atoms; cycloalkylalkyl of 4 through 10 carbon atoms; bicycloalkyl of 7 through 10 carbon atoms; hydrocarbyl arylalkyl of 5 through 9 carbon atoms; alkynyl of 3 through 4 carbon atoms; and phenyl;

R_3 is hydrogen; alkyl of 1 through 4 carbon atoms; alkynyl of 3 through 4 carbon atoms; or alkenyl of 3 through 4 carbon atoms;

R_6 is alkyl of 1 through 8 carbon atoms; cycloalkyl of 5 through 8 carbon atoms; alkenyl of 3 through 8 carbon atoms; phenyl; or benzyl; and

X_1, X_2, and X_3 are each independently selected from oxygen and sulfur;

provided that:

a. at least one of R_1, R_2, R_4, and R_5 is other than hydrogen;

b. no more than one of R_1, R_2, R_4, and R_5 is phenyl or arylalkyl;

c. the total number of carbon atoms in R_1 and R_2 does not exceed 10;

d. the total number of carbon atoms in R_4 and R_5 does not exceed 10; and

e. when R_6 is normal alkyl of 3 through 8 carbon atoms, cycloalkyl of 6 through 8 carbon atoms and benzyl, and R_3 is hydrogen, and one of R_1, R_2, R_4, and R_5 is phenyl, then only one of the other R_1, R_2, R_4, and R_5 can be other than hydrogen; and the alkali metal, alkaline earth and ammonium salts of the above compounds in which R_3 is hydrogen.

3,879,191

USE OF HERBICIDAL BENZYL ALCOHOLS

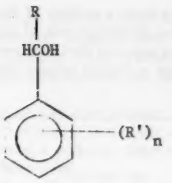
Jerome M. Lavanish, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 264,685, June 20, 1972, abandoned. This application July 25, 1973, Ser. No. 382,623

Int. Cl. A01n 9/24

U.S. Cl. 71—122 16 Claims

1. A method for controlling annual grasses comprising applying in pre-emergent mode to soil containing annual grass seeds a compound represented by the structural formula



wherein:

R is hydrogen or alkyl containing from 1 to 4 carbon atoms;

each R′ is independently an alkyl containing from 1 to 6 carbon atoms; and

n is 2, 3, or 4;

in an amount effective to preclude the establishment from such seeds of annual grass in said soil.

3,879,192

ELECTROSLAG-REMELTING METHOD

Kiyoshi Segawa; Yasushi Nakamura, both of Tokyo; Naoki Tokumitsu, Yokohama, and Kazuumi Harashima, Kawasaki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 212,724, Dec. 27, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 414,842

Claims priority, application Japan, Dec. 31, 1970, 45-129162

Int. Cl. C22d 7/00

U.S. Cl. 75—10 C 8 Claims

1. An electroslag-remelting method for refining a metal which comprises immersing the unrefined metal in a slag contained in a water-cooled casting mold, the slag having an electric current applied thereto and consisting essentially of (1) 0.5 to 6% by weight of at least one metallic element selected from the group consisting of calcium, strontium and barium and (2) at least one fluoride selected from the group consisting of calcium, strontium, magnesium and barium fluorides, any impurities in the form of alumina, silica, titania and manganese oxide being present in an amount of less than 0.5% each, by weight, and carrying out remelting and refining of the metal in an atmosphere of at least one gas selected from the group consisting of argon, helium and nitrogen.

3,879,193

PROCESS FOR DIRECTLY REDUCING MATERIALS CONTAINING IRON OXIDE IN A ROTARY KILN IN CONCURRENT FLOW OPERATION

Heitmann Günter, Frankfurt, Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 795,069, Jan. 29, 1969, abandoned. This application Dec. 17, 1971, Ser. No. 209,444

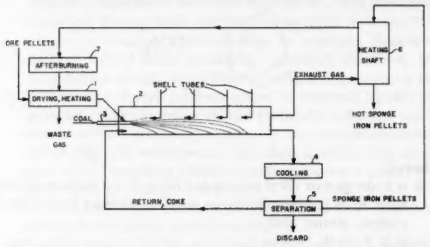
Claims priority, application Germany, Feb. 8, 1968, P1583954

Int. Cl. C21b 13/08

U.S. Cl. 75—35 7 Claims

1. In a process for producing a sponge iron product wherein the feed material containing iron oxide is preheated and fed to the charge end of a rotary kiln with a solid carbonaceous reducing agent to constitute the kiln charge therefor, the kiln charge and the kiln atmosphere is then moved concurrently in the kiln at an elevated temperature to achieve a reduction of said feed material therein, the resulting reduced material containing sponge iron is withdrawn from the discharge end of the rotary kiln, the sponge iron is thereafter cooled and separated therefrom and the exhaust gases having a temperature on the order of about 1100°C are discharged from the discharge end of said kiln, the improvement in combination therewith comprising contacting the cooled and separated

sponge iron with at least a portion of the hot exhaust gases recovered from the discharge end of said kiln under non-oxidizing conditions adjacent the discharge end of and outside the kiln to produce a heated sponge iron product thereby



cooling the exhaust gases to at least about 500°C, thereby permitting the ready transfer of said gases, transferring the cooled exhaust gases and using the transferred cooled exhaust gases to preheat said feed material containing iron oxide.

3,879,194

ALUMINUM ALLOYS

Larry Roy Morris, Yarker, Ontario; Frederick Barry Miners, and James Brian Lowe, both of Kingston, Ontario, all of Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed May 24, 1972, Ser. No. 256,313

Claims priority, application United Kingdom, May 25, 1971, 17067/71

Int. Cl. C22c *21/02*

U.S. Cl. 75—147 **5 Claims**

1. An aluminium magnesium silicon alloy consisting essentially of 0.2 – 0.6% Si and 0.45 – 0.9% Mg, 0.02 – 0.3% of a metal selected from the group consisting of Mn and Mo, 0.1 – 0.25% Fe, the amount of Si in excess of that required to convert all Mg to Mg_2Si being 0.09 – 0.32%, less than 0.1% Cu, less than 0.1% Zn, less than 0.1% Cr, less than 0.1% Ti, less than 0.15% other impurities, balance aluminium.

3,879,195

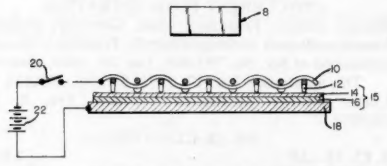
ELECTROPHOTOGRAPHY WITH A PHOTOCONDUCTOR COATED FINE MESH

Richard A. Fotland, Warrensville Heights, Ohio, assignor to Horizons Incorporated, Cleveland, Ohio

Filed Jan. 5, 1973, Ser. No. 321,181

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **4 Claims**



1. A process for forming a latent electrostatic image on a dielectric sheet in conformance with an optical image which comprises:

disposing an opaque electrically conductive mesh a portion of which is coated with a photoconductor in physical contact with an opaque record sheet consisting of an electroconductive paper base coated with a charge supporting insulating layer, that portion of said mesh which is in physical contact with said record sheet being coated with said photoconductor;

applying an electrical potential between said electrically conducting mesh and a conductive layer adjacent to said insulating layer; and

projecting an optical image on that side of said coated mesh which is opposite to the side disposed on said record sheet, simultaneously with said application of potential, whereby a latent electrostatic image is formed on said record sheet.

3,879,196

ELECTROPHOTOGRAPHIC METHOD FOR COLORED IMAGES

Shinichiro Nagashima; Kaichi Tsuchiya; Yoshihiro Sakamoto; Hiroshi Yamakami, all of Tokyo, and Seiji Tomari, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,672

Claims priority, application Japan, Nov. 15, 1971, 46-91246; June 5, 1972, 47-55780; July 10, 1972, 47-68786

Int. Cl. G03g *9/02*

U.S. Cl. 96—1.2 **16 Claims**

1. An electrophotographic method which comprises (I) developing an electric latent image formed on a photosensitive member comprising a photoconductive material and containing a color forming agent (B) and a color forming auxiliary agent having a melting point ranging from 40° to 130°C selected from the group consisting of fatty acid, fatty acid metal salt,

$$R_2\text{-}\overset{\overset{O}{\|}}{C}\text{-}OR_3 \quad (R_2 = \text{alkyl};\ R_3 = \text{alkyl or aryl}),$$

$$R_4\text{-}\overset{\overset{O}{\|}}{C}\text{-}N\begin{matrix}R_5\\R_6\end{matrix} \quad (R_4 = \text{alkyl};\ R_5,\ R_6 = \text{H, alkyl or aryl}),$$

and solid plasticizer, said color forming auxiliary agent added in the amount of 50 to 250 parts per 100 parts of the color forming agent (B), in a surface for forming a visible image with a charged toner particle containing a color forming agent (A), and (II) heating to cause a thermal color forming reaction between the color forming agent (A) in the toner and the color forming agent (B) in the photosensitive member resulting in formation of a colored fixed image on the photosensitive member, the color forming agent (A) being selected from the group consisting of

1. polymer of phenol and aldehyde,
2. polymer of phenol and acetylene,
3. rosin modified maleic acid resin,
4. hydrolyzed product of copolymer of styrene and maleic anhydride,
5. hydrolyzed product of polymer of carboxy polyethylene,
6. hydrolyzed product of copolymr of vinyl methyl ether and maleic anhydride,
7. hydrolyzed product of copolymer of ethylene and maleic anhydride,
8. Japanese acid clay,
9. bentonite,
10. diatomaceous earth,
11. bisphenol compounds containing carboxyl radical in a molecule,
12. polymers of bisphenol compounds containing carboxyl radical in a molecule, and
13. phenolic material,

and the color forming agent (B) being selected from the group consisting of

1. diarylphthalides,
2. leuco auramines,

3. acryl auramines,
4. α,β-unsaturated arylketones,
5. basic monoazo dyestuff,
6. rhodamine B lactone,
7. polyaryl carbinols,
8. benzoindolino spiropyrans,
9. phthalans, and
10. spirophthalans.

3,879,197

ELECTROPHOTOGRAPHIC COPYING PROCESS

Richard F. Bartlett, Burlington, and Laura K. Case, Winchester, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Sept. 3, 1969, Ser. No. 855,026
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.4 **7 Claims**

1. A process for forming one or more copies of an original comprising the steps of:

a. forming a copy medium by coating a support with an organic photosensitive material which undergoes a substantially irreversible chemical change upon being struck with actinic radiation to substantially permanently alter its conductivity, said photosensitive material comprising an N-vinyl carbazole and an organic halogen derivative capable of forming a hydrohalide acid upon being struck with actinic radiation;

b. exposing said copy medium to an image pattern of actinic radiation representative of said original whereby said irreversible chemical change occurs;

c. applying an electrical field across said exposed copy medium thereby providing an electrostatic image pattern; and,

d. developing said electrostatic image pattern with image-forming materials to form a visible image of said original.

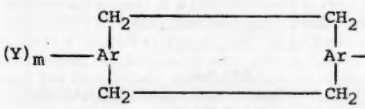
3,879,198

ELECTROPHOTOGRAPHIC AMBIPOLAR PHOTOCONDUCTIVE COMPOSITION AND IMAGING METHOD

Franklin D. Saeva, Webster, N.Y.; Mosher Levy, Rehovot, Israel; Stephen Strella, Pittsford, N.Y.; James M. Pearson, Webster, N.Y., and David J. Williams, Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 20, 1973, Ser. No. 333,849
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 **21 Claims**

1. An imaging member comprising an electrically conductive substrate having a substantially homogeneous, coherent and adherent polymeric photoconductive layer overlying and operatively associated with said electrically conductive substrate, said polymeric photoconductive layer comprising the product of the in situ polymerization of about 0.5 to about 50 weight percent, based upon the combined weight of essential components of said layer, of at least one cyclic compound of the formula:



wherein Ar is a polyaromatic nucleus selected from the group consisting of diradicals of naphthalene and anthracene;

X and Y are independently selected from the group consisting of halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters; and *m* and *n* range from 0 to the total number of replacable hydrogens on the polyaromatic nucleus;

in a polymeric host resin, said host resin being a solid at room temperature, substantially miscible with the above cyclic compound(s) and thermally stable at temperatures prevailing during in situ polymerization of the above cyclic compound(s),

the product being (A) an interpolymer of said cyclic compound and the polymeric host resin, and (B) soluble or capable of forming a colloidal dispersion in solvents for the polymeric host resin.

3,879,199

SURFACE TREATMENT OF ARSENIC-SELENIUM PHOTOCONDUCTORS

Michael P. Trubisky, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 204,477, Dec. 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 888,030, Dec. 24, 1969, abandoned. This application Apr. 5, 1973, Ser. No. 348,370
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **5 Claims**

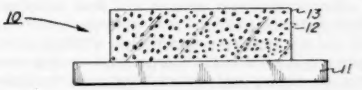
1. A xerographic plate which consists essentially of a supporting electrically conductive substrate, a photoconductive layer consisting essentially of an arsenic-selenium alloy having an arsenic content from about 0.5 to 50 percent by weight of said alloy overlaying said substrate, with said photoconductive layer being overcoated with an electrically insulating, thin film of a material selected from the group consisting of; a mixture of 90 weight percent vinyl chloride and 10 weight percent vinyl acetate, chloranil, the tributyl amine salt of styrenemethacrylic acid, 2,4,7-trinitro-9-fluorene, p-benzoquinone, naphthylamine, hexachlorobenzene, polyvinyl carbazole, N-vinyl carbazole, N-N-dimethylallylamine, anthracene, aniline hydrochloride, mesitylene, and phenoxy resins, said film having a thickness of between about 25 to 2,000 Anstrom Units.

3,879,200

NOVEL XEROGRAPHIC PLATE CONTAINING PHOTOINJECTING BIS-BENZIMIDAZOLE PIGMENTS

Paul J. Regensburger, Webster, and James J. Jakubowski, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 94,067, Dec. 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 14,467, Feb. 26, 1970, abandoned. This application Apr. 5, 1973, Ser. No. 348,398
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **22 Claims**



1. An electrophotographic plate having a photoreceptor member of from about 2 to 100 microns comprising a photoconductive material and an active transport material both of which are compatible so as to support efficient photogenerated charge injection from the photoconductive material, said photoconductive material being a photoinjecting pigment being selected from the class of bis-benzimidazole pigments in an amount between about 0.1 and 5 percent by volume of the active transport layer and said active transport material being a charge transport medium which is substantially nonabsorbing in the wavelength region of from about 4,000 to 6,500 Angstrom Units.

3,879,201

PERSISTENT PHOTOCONDUCTIVE COMPOSITIONS

David J. Williams, Fairport, N.Y.; Marcel A. Lardon, Trubach/SG, Switzerland; Martin A. Abkowitz, and Gustav Pfister, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1972, Ser. No. 316,152
Int. Cl. G03g 5/00
U.S. Cl. 96—1.6 19 Claims

1. An electrostatographic imaging method which comprises the steps of:

a. providing an imaging member having a photoconductive imaging layer comprising an organic photoconductive material, an activator capable of formation of a charge transfer complex with said photoconductive material, and a protonic acid, said acid being present in sufficient concentration in relation to the activator to enhance the stability of a complex formed during illumination between the anion radical form of the activator and a proton and thus extend the elevated level of conductivity of the photoconductive imaging layer subsequent to the illumination thereof;

b. illuminating the imaging layer in image configuration for an interval sufficient to generate a photoinduced state of elevated conductivity within said imaging surface in the light struck areas which persists subsequent to illumination;

c. forming a latent electrostatic image on the imaging layer by charging said layer in the dark;

3,879,202

COLOR PHOTOGRAPHIC PROCESS

Seiya Yamaguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Sept. 29, 1972, Ser. No. 293,719
Claims priority, application Japan, Sept. 30, 1971, 46-76516
Int. Cl. G03c 7/16, 5/32
U.S. Cl. 96—22 12 Claims

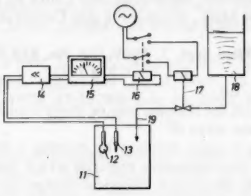
1. A process for developing a color photographic material having a waterproof support wherein the material is subjected to a color development process and then simultaneously bleached, fixed and stabilized with an oxidizer, a silver halide solvent and a compound containing an aldehyde group or a methylol group, wherein the improvement consists essentially of color developing said material and then simultaneously bleaching, fixing and stabilizing said photographic material by processing the color photographic material in a blix-stabilizing bath containing a water-soluble ferric complex salt of an organic acid, a solvent for silver halide, and 0.05 to 5.0 g. per liter of said bath of a water-soluble compound having an aldehyde group or a methylol group and being selected from the group consisting of compounds represented by the formula R—CHO wherein R represents an alkyl group, an aryl group; an allyl group or a heterocyclic group, compounds represented by the formula OHC—R′—CHO wherein R′ represents a direct bond, a divalent aliphatic group or a divalent aromatic group and compounds represented by the formula R″—CH_2OH wherein R″ represents an aliphatic group, an aromatic group, or a heterocyclic group, said blix-stabilizing bath having a pH within the range of about 5.5 to about 7.5.

3,879,203

PROCESS FOR BLEACH-FIXING COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Karl-Wilhelm Schranz, Odenthal-Hanenberg; Reinhard Müller, Leverkusen; Erwin Schön, Leverkusen, and Wolfgang Hunicke, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 9, 1973, Ser. No. 349,229
Claims priority, application Germany, Apr. 12, 1972, 2217570
Int. Cl. G03c 5/26, 5/32
U.S. Cl. 96—60 BF 5 Claims



1. The method of bleach-fixing developed color photographic silver halide material comprising passing developed color photographic material into the plurality of separate means arranged in series for applying bleach-fix solution to the developed color material, passing the developed color material into the first means for applying bleach-fix solution and from the first means to and through at least one later means for applying a bleach-fix solution to the developed color material, introducing into said last bleach-fix applying means a bleach-fix solution having an oxidizing power at a pH of between 6 and 8 and a low silver content and containing a heavy metal complex of a complex forming aminopolyacetic acid as bleaching agent and a silver salt solvent as fixing agent first into the last means continuously passing the bleach-fix solution from one application means to the next adjacent application means countercurrent to the photomaterial passage by initially passing a portion of this last application means to the next adjacent means so that a portion is passed to the first means countercurrent to the direction of movement of said developed color photographic material; and diminishing the oxidizing power of the bleach-fix solution in the first means by decreasing the pH to 5.5 or less, or adding a reducing agent to lower the redox potential to a value between 0 and 100 mV more positive than the potential of the equivalence point defined by the 1:1 mixture of reduced and oxidized forms of the redox system; a portion of the bleach-fixing solution of the first means is passed out of the installation and a corresponding amount of regenerator bleach-fix solution is added to the last of the means in a cycle wherein the developed photographic material is treated in the first means to remove a greater percentage of silver from the developed material than in any latter means and the developed material is treated in at least one latter means at a redox potential of more than 100 mV more positive than that of the equivalence point and at a pH of between 6 and 8 to remove the residual silver from the color photographic material.

3,879,204

TWO-LAYER PHOTOPOLYMERIZABLE GRAVURE RESIST FILM

Joseph Edmund Gervay, Red Bank, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 112,085, Feb. 2, 1971, abandoned. This application May 9, 1973, Ser. No. 358,526
Int. Cl. G03c 1/90
U.S. Cl. 96—83 13 Claims

1. An element for forming a heterogeneous diffusion etched resist of substantially uniform thickness comprising a smooth, flexible, dry strippable support bearing, in order,

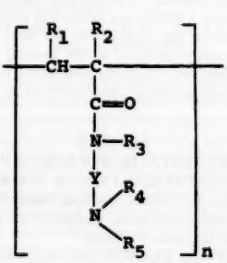
a. a hydrophilic macromolecular organic colloid layer containing a surfactant, and having a coating weight of at least about 1.0 mg./dm.^{2}, and
b. a photopolymerizable diffusion resist layer comprising a hydrophilic macromolecular polymer dispersion medium including a dispersed phase containing
1. at least one ethylenically unsaturated monomer having a boiling point above 100°C. at normal atmospheric pressure and being capable of forming a high polymer by free-radical initiated, chain-propagating addition polymerization; and
2. in reactive association with said monomer, at least one free-radical photoinitiating system activatable by actinic radiation in an amount constituting from 0.01 to 20.0% by weight of the total solids in said dispersion.

3,879,205
METHOD OF PREPARING PHOTOSENSITIVE SILVER HALIDE EMULSIONS

Maurice J. Fitzgerald, Canton, and Lloyd D. Taylor, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 187,852, Oct. 8, 1971, abandoned. This application Aug. 23, 1973, Ser. No. 390,767
Int. Cl. G03c *1/04*
U.S. Cl. 96—114 **9 Claims**

1. A method of preparing a photosensitive silver halide emulsion which comprises reacting in the absence of gelatin a water-soluble silver salt with a water-soluble halide salt in an aqueous solution containing a polymer having in its structure repeating units of the formula:



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, and halogen; R_2 is selected from the group consisting of hydrogen, lower alkyl, halogen and cyano; R_3, R_4 and R_5 each is selected from the group consisting of hydrogen, lower alkyl, cycloalkyl; R_4 and R_5 together may be chemically joined to form a cycloalkyl group; Y is selected from the group consisting of alkylene or cycloalkylene; and n is a positive integer greater than 1.

3,879,206
COMPOSITION FOR IMPREGNATION OF MASONRY HAVING A NEUTRAL OR ACIDIC REACTION SURFACE

Heinz Nestler, Niederkassel-Ranzel; Jürgen Amort, Treisdorf, and Leo Hans Plankl, Recklinghausen, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Nov. 23, 1973, Ser. No. 418,627
Claims priority, application Germany, Dec. 1, 1972, 2258901
Int. Cl. C09k *3/18*
U.S. Cl. 106—12 **7 Claims**

1. An improved composition for the impregnation of masonry surfaces comprising an alcoholic or hydrocarbon solution of an alkyltrialkoxysilane or a partial condensation product thereof and an additive present in an amount between 1 and 100% based upon the weight of the alkyltrialkoxysilane, said additive being an organofunctional silane having a basic organo group or an alcoholate of an element selected from the group consisting of silicon, a metal of the First Main Group of the Periodic System, a metal of the Second Main Group of the Periodic System, a metal of the Fourth Sub-Group of the Periodic System and a metal of the Fifth Sub-Group of the Periodic System.

3,879,207
GLASS FOR A FIBRE-OPTICAL ELEMENT

Christianus Johannes Maria Hartman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 27, 1973, Ser. No. 345,443
Claims priority, application Netherlands, Apr. 5, 1972, 7204501
Int. Cl. C03c *3/08, 13/00*
U.S. Cl. 106—54 **2 Claims**

1. Glass having a high refractive index which is particularly suitable as a core of glass fibres bundled in a fibreoptical element and which consists essentially of the following constituents having between the following limits in percent by weight:

B_2O_3	4 – 16	ZnO	2 – 6
combined	14 – 26		
SiO_2	10 – 20	ZrO_2	4 – 8
Al_2O_3	1 – 4	Nb_2O_5	5 – 13
La_2O_3	31 – 35	Ta_2O_5	2 – 10
BaO	12 – 16		

and wherein said glass has an index of refraction of about 1.802 to 1.808, has a coefficient of expansion from 30° to 300°C of about 72.0 to 72.4 × 10^{-7}/°C. and has a softening point between 764°C and 796°C.

3,879,208
REFRACTORY COMPOSITION

Nicholas Cassens, Jr., Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Feb. 19, 1974, Ser. No. 443,579
Int. Cl. C04b *35/04*
U.S. Cl. 106—58 **23 Claims**

1. A refractory composition consisting essentially of sized refractory aggregate including at least 10%, based on the total weight of the composition, MgO-containing grain having at least 50% MgO and passing a 100 mesh screen, from 0.1 to 1.5%, on the dehydrated basis, aluminum sulfate, from 0.2 to 1.5% of an organic acid or salt thereof, and up to 1%, expressed as B_2O_3, of a boron compound.

3,879,209
PROCESS FOR PREPARING FAST-SETTING AGGREGATE COMPOSITIONS AND PRODUCTS OF LOW POROSITY PRODUCED THEREWITH

Robert W. Limes, Seven Hills, and Robert O. Russell, Fairview Park, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 203,835, Dec. 1, 1971, abandoned. This application June 29, 1973, Ser. No. 374,969
Int. Cl. C04b *35/04*
U.S. Cl. 106—58 **10 Claims**

1. A process for producing a fast-setting concrete structure, having a porosity of not more than about 5 percent, which is capable of load-bearing use within a few hours after mixing and which is produced and intended to be used in a situation of ordinary ambient atmospheric temperature of not more than about 150°F, comprising
a. establishing a mixture of
i. an aggregate containing at least about 10 percent by weight of magnesia and
ii. ammonium phosphates in aqueous solution in an amount equal to between about 3 and about 10 parts

by weight of P_2O_5 per 100 parts by weight of said aggregate, the composition of said phosphates in percent by weight being not more than about 40 percent orthophosphate and at least about 60 percent phosphates selected from the class consisting of pyrophosphate and polyphosphates whereof at least about 2 percent are polyphosphates;

b. applying said mixture, promptly after establishment thereof, into a form defining a shaped open space to constitute said structure; and

c. allowing said applied mixture to set in said defined open space at a temperature in the range from above the freezing point of said solution to about 150°F to produce a hard, strong structure within said few hours, all of the steps (a) and (b) and of said setting being effected while said mixture is maintained in a situation of ambient atmospheric temperature of not more than about 150°F and said applied mix and set structure being maintained in said situation for at least seven days after step (b) to develop hydraulic strength and said set structure being suitable for continuous load-bearing use in said situation.

3,879,210

FUSED-CAST REFRACTORY

Richard Gary LaBar, Youngstown, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed June 14, 1972, Ser. No. 262,830

Int. Cl. C04b *35/10*

U.S. Cl. 106—65 **4 Claims**

1. A fused-cast refractory article comprising crystals of corundum bonded by a refractory aluminum borosilicate glass, said article comprising about 98 to about 99 weight percent alumina, about 0.3 to about 0.7 weight percent boric oxide and about 0.4 to about 0.9 weight percent silica, the ratio of boric oxide to silica being from 0.4 to 1.5.

3,879,211

CERAMIC PRODUCT AND METHOD OF MAKING SAME

Joseph M. Klotz, 341 Santa Monica, Corpus Christi, Tex. 78411

Filed June 14, 1973, Ser. No. 369,913

Int. Cl. C04b *33/00*

U.S. Cl. 106—67 **8 Claims**

1. A ceramic product made from an initial mixture comprising from 81 to 97 percent of red mud containing at least 40 percent iron expressed as Fe_2O_3, from 2 to 9 percent of sodium bentonite or calcium bentonite or mixtures thereof; and from 0 to 10 percent of calcium sulfate; said product being vitrified by firing said initial mixture at a temperature in the range of 1950° to 2500° F.

3,879,212

PROCESS FOR THE PRODUCTION OF AMYLOSE FILMS

Mikohiko Yoshida, and Mamoru Hirao, both of Okayama-ken, Japan, assignors to Hayashibara Company, Okayama, Japan

Filed Nov. 6, 1970, Ser. No. 87,575

Claims priority, application Japan, Nov. 9, 1969, 44-89516; Dec. 10, 1969, 44-99182

Int. Cl. C08b *27/42, 29/14, 25/02*

U.S. Cl. 106—213 **5 Claims**

1. A process for the production of amylose films comprising forming said films from amylopectin-free amylose having a content of short chain amylose less than 50% obtained by hydrolyzing starch with α-1,6-glucosidase from the species Pseudomonas amyloderomosa and with the addition of a plasticizing amount of suitable plasticizer.

3,879,213

SPOT REMOVING SUBSTANCE

William L. Nelson, 7933 E. 36th St., Indianapolis, Ind. 46226, and Chauncey M. Fine, R.R. No. 8, Crawfordsville, Ind. 47933

Continuation-in-part of Ser. No. 255,618, May 22, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,565

Int. Cl. C09k *3/00*

U.S. Cl. 106—286 **3 Claims**

1. A substance for removing spots and stains from carpets and rugs and the like, comprising a thoroughly mixed combination of fuller's earth, Blue Cloud clay, and white sand comprising about 99% silica wherein said fuller's earth comprises about 80% by volume, said Blue Cloud comprises about 10% by volume, and said white sand comprises about 10% by volume of the substance.

3,879,214

ROADSTONE

Edward James Lowe, Stourton near Stourbridge; Arthur Wilson, Stourbridge, and Stephen Lubetkin, Birmingham, all of England, assignors to Albright and Wilson Limited, Birmingham, England

Continuation of Ser. No. 93,456, Nov. 27, 1970, abandoned. This application Apr. 19, 1973, Ser. No. 352,635

Claims priority, application United Kingdom, Nov. 28, 1969, 58321/69; Apr. 20, 1970, 18797/70

Int. Cl. C08h *17/04*

U.S. Cl. 106—288 B **20 Claims**

1. A method for the manufacture of sintered slag roadstone which consists in heating ground slag having a particle size less than 1 mm in the absence of combustible solids to a sintering temperature above 1,000°C but below the melting point of at least the majority of the ground slag the heat being supplied entirely from sources external to the ground slag to form a sinter product and then crushing said sinter product to form a granular product having a diameter from ⅛ inch to 1 inch.

3,879,215

COMPARTMENTALIZED VACUUM PAN FOR CRYSTALLIZATION OF SUGAR

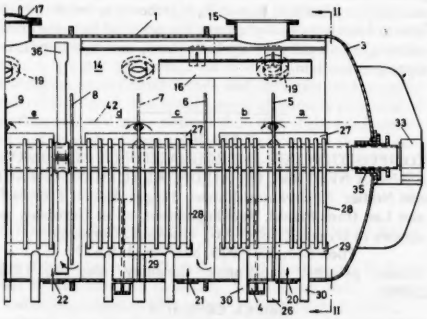
Octave D'Hotman De Villiers, Durban, South Africa, and Aziz Hussain, Karachi, Pakistan, assignors to Hyesons Sugar Mills Limited, Karachi, Pakistan

Filed Aug. 23, 1973, Ser. No. 390,842

Claims priority, application United Kingdom, Aug. 24, 1972, 39521/72

Int. Cl. B01d *1/00;* **C13g** *1/02, 1/00*

U.S. Cl. 127—16 **10 Claims**



1. A vacuum pan for the continuous boiling of sugar, comprising, in combination:

a vapor-tight generally cylindrical casing of length greater than diameter, having its longitudinal axis substantiall horizontal;

1 a sereis of static partitions within said casing, perpendicular to the longitudinal axis thereof and extending to a height intermediate between that of said longitudinal axis and the top of the casing, said partitions defining a plurality of open-topped compartments communicating with a common vapor space extending above them within the casing;

inlet means for continuously introducing sugar syrup and seed crystals into the compartment nearest one end of the casing, and outlet means for continuously withdrawing sugar syrup and product crystals form the compartment nearest the opposite end of the casing;

communication means for sugar syrup and crystals between adjacent compartments comprising, respectively in alternate partitions of the series, underflow openings located at the bottom of the partitions and overlfow weirs at the top of the partitions, whereby the sugar syrup and crystals are constrained to follow a tortuous path when flowing through the pan between said inlet and outlet means;

evacuating means communicating with said vapor space, for removing vapor therefrom and form maintaining a reduced pressure therein;

and heating means for heating the sugar syrup and crystals inside the pan.

3,879,216
METHOD AND COMPOSITION FOR CLEANING SURFACES

Sigmund N. Austin, Detroit, Mich., assignor to Austinite Corporation, Southfield, Mich.

Filed Sept. 25, 1972, Ser. No. 291,886
Int. Cl. B08b *3/08*
U.S. Cl. 134—4 **11 Claims**

1. A method for cleaning a surface comprising applying to the surface a first coating of a slurry of a water-insoluble finely divided solid absorbent material in an aqueous acidic solution containing phosphate radical, a chelating agent and a surfactant; after said slurry has dried applying to said coating a coating of a second slurry of water-insoluble finely divided solid absorbent material in a liquid comprising a mixture of (a) a second aqueous solution comprising a chelating agent, a surfactant, water-soluble organic solvent and a compound selected from the group consisting of sodium nitrite, soluble silicates and mixtures thereof, and (b) water-insoluble organic solvent; and after said second coating has been absorbed through said first coating removing said coatings.

3,879,217
ELECTRIC STORAGE BATTERY GRIDS

Kenneth Peters, Worsley, England, assignor to Electric Power Storage Limited, London, England

Filed Feb. 13, 1974, Ser. No. 442,188
Claims priority, application United Kingdom, Mar. 15, 1973, 12572/73
Int. Cl. C22c *11/00*
U.S. Cl. 135—26 **9 Claims**

1. An electric storage battery grid made from an alloy comprising by weight:

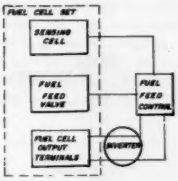
Up to 4.0% antimony,
0% up to 0.5% arsenic,
0% up to 0.1% copper,
0% up to 0.5% sulphur,
0% up to 0.5% tin,

and selenium 0.001% up to less than 0.005%, the balance being lead, trace elements, known optional alloy ingredients and impurities.

3,879,218
APPARATUS FOR CONTROLLING THE FEEDING OF REACTANT TO A FUEL CELL

Francis J. Kellen, Mequon, and Scott S. Tomter, Milwaukee, both of Wis., assignors to Teledyne Isotopes, Westwood, N.J.

Filed May 17, 1973, Ser. No. 361,166
Int. Cl. H01m *27/12*
U.S. Cl. 136—86 B **8 Claims**



1. Apparatus for controlling the feeding of reactant to a fuel cell, comprising:

a source of electrical energy;

valve means for regulating the amount of reactant fed to said fuel cell;

sensing means in operative relationship with said fuel cell for sensing concentration of said reactant in said fuel cell; driver means for applying to said sensing means a pulsed driving current whose duration is on the order of 0.1 seconds and whose pulses are spaced by on the order of at least 4 seconds;

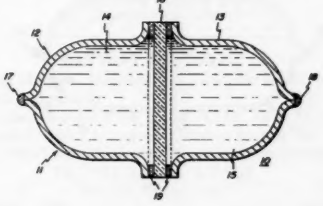
means in circuit with said valve means, said sensing means and with said energy source for controlling operation of said valve means in accordance with the concentration of reactant in said fuel cell; and

means in operative relationship for selectively isolating, with respect to at least D.C. electrical energy, the terminals of said fuel cell from said controliing means and said sensing means to eliminate leakage of electrical energy between said fuel cell terminals, said sensing means, and said controlling means.

3,879,219
SEALED PRIMARY SODIUM-HALOGEN CELL

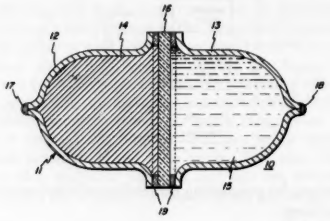
Gregory C. Farrington, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 18, 1974, Ser. No. 451,964
Int. Cl. H01m *13/00*
U.S. Cl. 136—83 R **4 Claims**



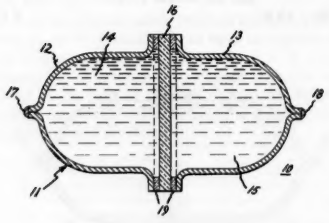
1. A sealed primary sodium-halogen cell comprising a casing, an anode positioned in the casing, the anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte, a solid sodium beta-alumina ion-conductive electrolyte positioned in the casing adjacent the anode, and a cathode positioned adjacent the opposite side of the electrolyte, the cathode comprising an anhydrous mixture of a salt selected from the class consisting of tri- and tetraalkylammonium chlorides and bromides, and bromine.

3,879,220
SEALED PRIMARY SODIUM-HALOGEN CELL
Fritz G. Will, Scotia, and Gregory C. Farrington, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 21, 1974, Ser. No. 453,282
Int. Cl. H01m 13/00
U.S. Cl. 136—83 R 6 Claims



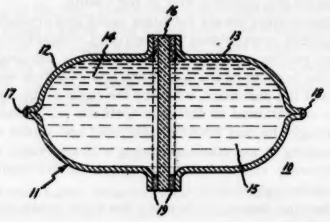
1. A sealed primary sodium-halogen cell comprising a casing, an anode positioned in the casing, the anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte, a solid sodium beta-alumina ion-conductive electrolyte positioned in the casing adjacent the anode, and a cathode positioned adjacent the opposite side of the electrolyte, the cathode comprising from 5.0 weight percent to 95.0 weight percent of a halogen selected from the class consisting of bromine, iodine, and mixtures thereof in nitrobenzene as a solvent.

3,879,221
SEALED PRIMARY SODIUM-HALOGEN CELL
Gregory C. Farrington, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 27, 1974, Ser. No. 455,148
Int. Cl. H01m 13/00
U.S. Cl. 136—83 R 2 Claims



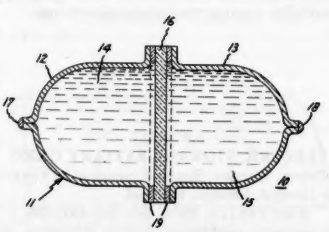
1. A sealed primary sodium-halogen cell comprising a casing, an anode positioned in the casing, the anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte, a solid sodium beta-alumina ion-conductive electrolyte positioned in the casing adjacent the anode, and a cathode positioned adjacent the opposite side of the electrolyte, the cathode comprising a halogen selected from the class consisting of iodine monochloride, and iodine monochloride in a nonaqueous solvent selected from the class consisting of acetonitrile, butyrolactone and propylene carbonate.

3,879,222
SEALED PRIMARY SODIUM-HALOGEN CELL
Peter C. Lord, Schenectady, and Gregory C. Farrington, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 27, 1974, Ser. No. 455,149
Int. Cl. H01m 13/00
U.S. Cl. 136—83 R 3 Claims



1. A sealed primary sodium-halogen cell comprising a casing, an anode positioned in the casing, the anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte, a solid sodium beta-alumina ion-conductive electrolyte positioned in the casing adjacent the anode, and a cathode positioned adjacent the opposite side of the electrolyte, the cathode comprising iodine monochloride in a solvent selected from the class consisting of thionyl chloride, phosphoryl chloride, and sulfuryl chloride.

3,879,223
SEALED PRIMARY SODIUM-HALOGEN CELL
Gregory C. Farrington, Clifton Park, and Peter C. Lord, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Apr. 5, 1974, Ser. No. 458,089
Int. Cl. H01m 13/00
U.S. Cl. 136—83 R 3 Claims



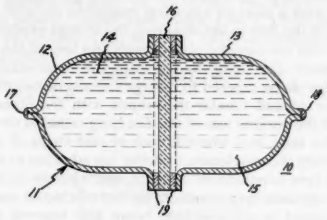
1. A sealed primary sodium-halogen cell comprising a casing, an anode positioned in the casing, the anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte, a solid sodium beta-alumina ion-conductive electrolyte positioned in the casing adjacent the anode, and a cathode positioned adjacent the opposite side of the electrolyte, the cathode only comprising a liquid selected from the class consisting of thionyl chloride, and thionyl chloride with conductivity-enhancing compounds.

3,879,224

SEALED PRIMARY SODIUM-HALOGEN CELL

Gregory C. Farrington, Clifton Park, and Peter C. Lord, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,092
Int. Cl. H01m 13/00
U.S. Cl. 136—83 R 2 Claims



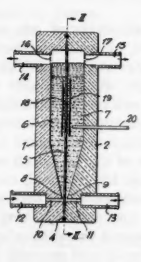
1. A sealed primary sodium-halogen cell comprising a casing, an anode positioned in the casing, the anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte, a solid sodium beta-alumina ion-conductive electrolyte positioned in the casing adjacent the anode, and a cathode positioned adjacent the opposite side of the electrolyte, the cathode only comprising a liquid selected from the class consisting of sulfuryl chloride, sulfuryl chloride with aluminum chloride, and sulfuryl chloride with ferric chloride.

3,879,225

ELECTROCHEMICAL CELLS COMPRISING FLUIDIZED BED ELECTRODES

John Rayner Backhurst, Allendale; Francis Goodridge; Raymond Ernest Plimley, both of Newcastle-upon-Tyne, and Martin Fleischmann, Chandlersford, all of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 803,166, Feb. 28, 1969, abandoned. This application May 2, 1973, Ser. No. 356,376
Claims priority, application United Kingdom, Mar. 6, 1968, 10923/68
Int. Cl. H01m 27/04
U.S. Cl. 136—86 D 8 Claims



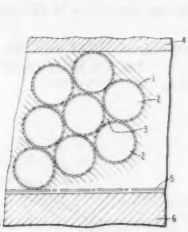
1. An electrode arrangement for an electro-chemical cell comprising an electrode chamber of rectangular horizontal cross-section, a bed of electrically conducting or semi-conducting particles enclosed by said chamber, which chamber in use of the cell is adapted to permit liquid flow upwardly through the bed of particles substantially uniformly over horizontal cross-sections of the chamber, electrically conducting means establishing electrical connection with said particles, at least one side wall of said chamber comprising, at least in part, a permeable or semi-permeable diphragm, the chamber having a tapered bottom portion wherein horizontal cross-sections of the flow path for said liquid flowing through the chamber gradually increase to the full horizontal cross-sectional area of the chamber, the chamber being effectively closed at its lower end, and an inlet into the electrode chamber adjacent the base of said tapered bottom portion, said inlet comprising a slot substantially longer in its horizontal dimension than in its vertical dimension extending substantially across the full horizontal width of said tapered portion, said slot opening into said tapered bottom portion from the side thereof which is opposite the said wall comprising at least in part the permeable or semi-permeable diaphragm, said vertical dimension of the slot being small enough to prevent the majority of said particles contained within the chamber from passing out of the chamber through the slot when the upward flow of liquid ceases.

3,879,226

NOVEL STRUCTURE OF ELECTRODE IN A PRIMARY BATTERY FOR UTILIZATION OF LIQUID OR GASEOUS ELECTRODE ACTIVE MATERIAL

Atsushi Tomonaga, Tokyo, Japan, assignor to Kureka Kagaku Kogyo Kabushiki Kaisha, Tokyo and Toyo Boseki Kabushiki Kaisha, Osaka, both of, Japan

Filed Mar. 27, 1974, Ser. No. 455,096
Claims priority, application Japan, Mar. 27, 1973, 48-34889
Int. Cl. H01m 17/00
U.S. Cl. 136—100 R 8 Claims



1. A primary battery having an electrolyte and having an electrode comprising semipermeable carbon hollow microspheres with a particle size of about 10 to 500 microns and a wall thickness of about 2 to 10 microns and containing therein fluid electrode active material for the battery, the carbon hollow microspheres having a sufficient pore size that a fluid can pass therethrough.

3,879,227

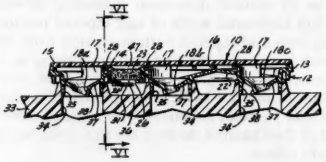
BATTERY VENT PLUG

Roy Erving Hennen, Mequon, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 354,514, April 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 236,461, March 20, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,055
Int. Cl. H01m 1/06
U.S. Cl. 136—177 21 Claims

1. A vent plug for a storage battery filling vent comprising a hollow body member composed of a base, a peripheral wall and a cover; a vent closure engaging portion extending from said base having an opening disposed in said engaging portion and in communication with said hollow body member; partition means extending substantially across said hollow body member; a porous diffuser disposed in said hollow body and in communication with said vent closure opening, said partition means arranged to afford obstruction to the passage of any liquid electrolyte from said vent closure opening to said diffuser; said hollow body member defining a compartment

spaced from and in communication with said porous diffuser and having an elongated outlet opening to the outside of said hollow body member, the ratio of the volume in cubic inches of said compartment to the area of said elongated outlet in square inches being within the range of 2:1 to 5:1, said elongated outlet in said compartment being of a smaller cross sectional area than the cross sectional area of said compartment and extending over a substantial distance of said compartment so as to permit an ignition of battery cell vent gases in said compartment to effect controlled rapid expansion whereby any flame is extinguished.

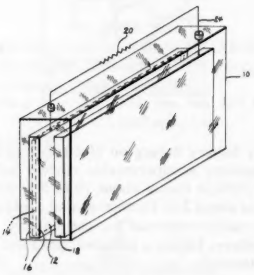


3,879,228

PHOTO-REGENERATIVE ELECTROCHEMICAL ENERGY CONVERTER

Ignatius E. Theodorou, Waban, and Richard Payne, Sudbury, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 6, 1972, Ser. No. 232,028
Int. Cl. H011 *15/02*
U.S. Cl. 136—206 **2 Claims**



1. A photoelectrochemical energy converter for converting incident radiant energy into electrical energy which comprises a potassium chloride aqueous electrolyte disposed within a sealed, inert, radiation-transparent envelope, a first electrode photo-chemically responsive to incident radiation energy and composed of a platinum substrate coated with a thin uniform layer of silver chloride, a second electrode composed of platinum, said first and second electrodes both immersed within and in contact with said electrolyte which provides a conductivity path therebetween.

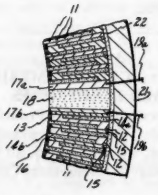
3,879,229

TUBULAR THERMOPILE

William W. Gilbert, 372 S. Williamsbury, Birmingham, Mich. 48010

Filed Apr. 19, 1972, Ser. No. 245,346
Int. Cl. H01r *1/02*
U.S. Cl. 136—208 **9 Claims**

1. A tubular thermopile wherein a plurality of elements comprising a series of alternate dissimilar type conductivity thermoelectric material strips and insulation of wedge-shaped cross-section are disposed as longitudinal elements of a cylinder and form the wall of said tubular thermopile, said elements being locked in full circular arch externally only by bands under stress which circumferentially seize said tubular thermopile and lock it into a full circular arch having no internal structural support, and wherein each of said strips of one type conductivity thermoelectric material is Zee-shaped in cross-section resembling a structural Zee with flanges shortened to protrude from its web approximately its web thickness and is covered with a layer of electrical insulation on both sides of the web of the Zee to the thickness the flanges protrude from the web, but not covered on the bases and toes of the flanges, the insulated Zee being wedge-shaped in cross-section with said wedge shape tapered to diverge radially outwardly of the centerline of said tubular thermopile with the planes of its sides and the vertical axis of the Zee lying radial to the centerline of the tube, and wherein each of said strips of one type conductivity thermoelectric material lies adjacent to a strip of opposite type conductivity material, and wherein each of said strips of opposite type conductivity thermoelectric material is wedge-shaped in cross-section being also tapered so as to diverge radially outwardly of the centerline of the tubular thermopile with the planes of its sides lying radial to said



centerline, each of said strips of one type thermoelectric material except the first of said series having the uninsulated toe of the flange of its Zee at the outside periphery and continuously along the length of said tubular thermopile pressed therealong against the next circumferentially preceding of said opposite type thermoelectric material strips of said series and forming an electrical junction, the plane of said junction lying radial to the centerline of the tube, and each of said strips of said one type thermoelectric material, except the last of said series, having the uninsulated toe of the flange of its Zee at the inside periphery and continuously along the length of said tubular thermopile pressed therealong against the next circumferentially following of said opposite type thermoelectric strips of said series and forming an electrical junction, the plane of said junction lying radial to the centerline of the tube, thereby junctioning all of both types except the first and last of said series of said elements in electrical series with means incorporated in said full circular arch to separate electrically the first and last elements of said electrical series, said series of elements and separating means forming the wall of the tubular thermopile with all of the first-mentioned junctions adjacent to the outside periphery and all of the second-mentioned junctions adjacent to the inside periphery of the tubular thermopile.

3,879,230

SEMICONDUCTOR DEVICE DIFFUSION SOURCE CONTAINING AS IMPURITIES AS AND P OR B

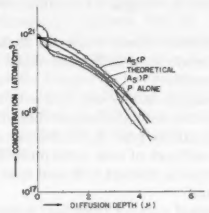
Masakatsu Nakamura; Toshio Yonezawa; Taketoshi Kato, all of Yokohama; Masaharu Watanabe, Kawasaki, and Minoru Akatsuka, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Division of Ser. No. 363,132, May 23, 1973, which is a continuation of Ser. No. 78,819, Oct. 7, 1970, abandoned. This application Sept. 26, 1973, Ser. No. 400,927

Claims priority, application Japan, Feb. 7, 1970, 45-10376; Mar. 2, 1970, 45-17103; Mar. 13, 1970, 45-20826; Mar. 28, 1970, 45-25627

Int. Cl. H01l 7/00

U.S. Cl. 148—1.5 3 Claims



1. Semiconductor diffusion source for use in manufacturing a semiconductor device having a semiconductor substrate to form a highly doped surface region in said substrate of said semiconductor device, said source comprising:

a. a first component phosphorus or boron; and

b. a second component of arsenic to compensate for a lattice strain caused by said first component when said first component is diffused as an impurity into a semiconductor substrate said first and second components being in amounts such that the concentration of the second impurity is smaller than that of the first impurity at the surface of said highly doped surface region.

3,879,231

METHOD OF SEALING TERNE SHEETS

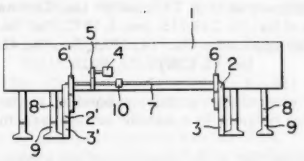
Takashi Watanabe, Kanagawa, and Eiichi Tarumi, Tokyo, both of Japan, assignors to Nippon Steel Corporation, Tokyo and Daido Steel Sheet Manufacturing Corporation, Amagasaki-shi, both of, Japan

Filed Dec. 26, 1972, Ser. No. 318,675

Claims priority, application Japan, Dec. 27, 1971, 47-1990; Sept. 29, 1972, 47-97778

Int. Cl. C23f 7/10

U.S. Cl. 148—6.15 R 3 Claims



2. A method of sealing terne sheets which comprises treating terne sheets with a treating solution prepared by adjusting the pH of an aqueous solution containing more than 0.1 percent of at least one biphosphate to less than 3 with an acid selected from the group consisting of orthophosphoric acid and condensed phosphoric acids.

3,879,232

METHOD FOR PRODUCING NON-AGEING COLD ROLLED STEEL SHEETS HAVING GOOD PRESS-FORMABILITY BY CONTINUOUS ANNEALING

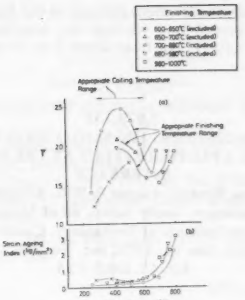
Hisashi Gondo; Hiroshi Takechi; Mitsunobu Abe; Kazuo Namba; Hiroaki Masui; Norimasa Uehara, and Kunihiko Komiya, all of Chiba, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 15, 1973, Ser. No. 416,059

Claims priority, application Japan, Nov. 20, 1972, 47-115649

Int. Cl. C21d 9/48

U.S. Cl. 148—12 C 10 Claims



1. A method for producing a cold rolled steel sheet having non-ageing properties and press-formability comprising hot rolling a steel containing not more than 0.015% of carbon, and containing manganese, aluminum, sulfur, oxygen and nitrogen and wherein

$$\frac{32}{55}\,S(\%) \quad Mn(\%) \quad 0.25 \qquad \ldots (1)$$

$$\frac{27}{14}\,N(\%) + \frac{27 \times 2}{16 \times 3}\,O(\%) \quad Al(\%) \quad 0.2 \qquad \ldots (2)$$

with a finishing temperature between 650° and 980°C, coiling at a temperature between 300° and 600°C, cold rolling and then continuously annealing the cold rolled steel sheet.

3,879,233

SMOKELESS FLUXING MATERIAL FOR HOT TIN-COATING, HOT-LEADING, AND HOT-GALVANIZING

Wolfgang Muller, Mannheim-Rheinau, and Wilhelm Brugger, Hosel, both of Germany, assignors to The Goldschmidt AG, Essen, Germany

Filed Apr. 9, 1973, Ser. No. 349,381

Claims priority, application Germany, Nov. 11, 1972, 2255433

Int. Cl. B23k 35/34

U.S. Cl. 148—26 1 Claim

1. A smokeless fluxing material for hot tin-coating, hot-galvanizing, and hot-leading, comprising a mixture of 68 percent by weight of zinc chloride, 24 percent by weight of an eutectic mixture of sodium chloride and potassium chloride, and 8 percent by weight of $ZrOCl_2 \cdot 6H_2O$.

3,879,234

LITHIA-CONTAINING FRIT ADDITIVES FOR MGO COATINGS

Leonard S. Lee, Daly City; Yoshio Uyeda, San Mateo, and Samuel W. Sopp, Foster City, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 211,126, Dec. 22, 1971, abandoned. This application Nov. 13, 1973, Ser. No. 415,477
Int. Cl. H01f 1/04
U.S. Cl. 148—113 1 Claim

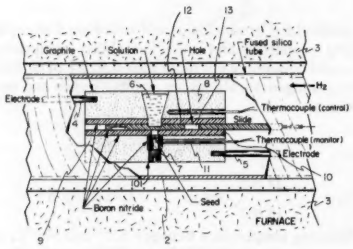
1. A method of producing a permanent electrical insulating film on magnetic silicon steel which comprises applying a coating composition consisting essentially of MgO, $Mg(OH)_2$ or mixtures thereof and a Li_2O—MgO frit to silicon steel and annealing said silicon steel at an elevated temperature wherein said frit is a complex that is formed by heating lithium hydroxide and MgO at about their melting points said lithium hydroxide being present from about 3–8 parts by weight per 100 parts by weight of MgO, wherein said frit being present at from about 0.1 to about 30 weight percent of the MgO, $Mg(OH)_2$ or mixtures thereof, and wherein the annealing occurs at about 950° – 1,500°C. for from about 2 to 50 hours.

3,879,235

METHOD OF GROWING FROM SOLUTION MATERIALS EXHIBITING A PELTIER EFFECT AT THE SOLID-MELT INTERFACE

Harry C. Gatos, Weston; August F. Witt, Arlington, and Manfred Lichtensteiger, South Acton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 11, 1973, Ser. No. 369,039
Int. Cl. H01l 7/38
U.S. Cl. 148—171 25 Claims



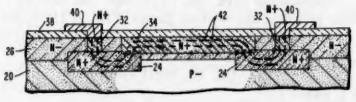
1. A method of growing epitaxial layers from a solution in a solution-substrate system, said system comprising materials that exhibit Peltier effect at interface between the solution and the substrate, that comprises: placing a conductive substrate in contact with a conductive solution which initially comprises a solvent and one or more materials to be deposited upon the substrate, establishing and maintaining the solution and the substrate at a temperature at which the solution is liquid and is at or near saturation, passing an electric current across the solution-substrate system in such a way that cooling is effected at the interface between the liquid solution and the substrate, said cooling occurring only during the time in which electric current flows across the interface and only at the region of said interface, the rest of the solution-substrate system, except said interface, being maintained at the temperature that existed prior to the passage of the electric current, and controlling the magnitude of the electric current to control the current density at said interface.

3,879,236

METHOD OF MAKING A SEMICONDUCTOR RESISTOR

Jack L. Langdon, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 128,427, March 26, 1971, Pat. No. 3,729,662. This application Feb. 2, 1973, Ser. No. 329,279
Int. Cl. H01l 7/36; H02l 27/04
U.S. Cl. 148—175 5 Claims



1. A method for forming a semiconductor resistor structure comprising:

introducing dopant atoms below the surface of a semiconductor substrate so as to form contacts below the surface of said substrate;

introducing dopant atoms into said substrate so as to form a resistor of a lower value of conductivity than, and of the same conductivity type as, said semiconductor contacts above the surfaces of said semiconductor contacts, so as to make physical contact with said spaced semiconductor contacts; and

making electrical contact from said spaced semiconductor contacts to the surface of said substrate, said surface electrical contacts being spaced from said resistor so as not to make contact with said resistor.

3,879,237

COATING COMPOSITIONS FOR STAINLESS STEELS

Harry L. Faigen, Philadelphia, Pa., and Amchem Products, Inc., Ambler, Pa.

Filed Jan. 16, 1973, Ser. No. 324,243
Int. Cl. C23f 7/18
U.S. Cl. 148—6.24 12 Claims

1. An aqueous acidic coating solution for applying conversion coatings to stainless steels and low-iron noble alloys consisting essentially of:

A. about 30 to about 90 g/l of oxalate ion;

B. a sulphur- and oxygen-containing accelerator in an amount such that about 1 to about 10 ml of a 0.05 N iodine solution is required to obtain an oxidation end point with a 10 ml sample of said coating solution;

C. at least about 1 g/l of manganese; and

D. fluoride in an amount such that the fluoride activity is equivalent to that obtained from the use of about 4 to about 50 g/l of ammonium bifluoride.

3,879,238

METAL-POLYMER COMPOSITES AND METHODS FOR THEIR PREPARATION

Clarence R. Bierman, and John D. Welks, both of Barrington, Ill., assignors to M & T Chemicals Inc., Greenwich, Conn.

Division of Ser. No. 215,115, Jan. 3, 1972, Pat. No. 3,833,458. This application Dec. 14, 1973, Ser. No. 424,656
Int. Cl. C09j 5/02; B32b 31/12
U.S. Cl. 156—3 7 Claims

1. A method for adhesively bonding a vinyl chloride-containing polymer to a metallic surface, said method comprising:

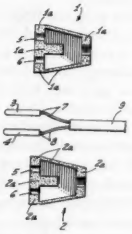
1. maintaining at the metallic surface a layer of polymer containing at least 3% by weight of repeating units derived from at least one ethylenically unsaturated carboxylic acid containing up to 12 carbon atoms, wherein the carboxylic acid residue is present as a pendant group, said layer having a lower surface which is in contact with said metallic surface and an upper surface which has been modified by treatment with an oxidizing or etching agent;

2. maintaining an adhesive composition at the interface between the modified upper surface of said layer and the vinyl chloride-containing polymer, the adhesive composition comprising:
   a. between 10 and 50 percent by weight of a synthetic rubber containing at least 20% by weight of acrylonitrile; and
   b. between 50 and 90% by weight of a cross-linkable phenol-aldehyde resin;
3. heating the resulting composite at a temperature above about 120°C. for a period of time sufficient to form a unitary bonded structure.

3,879,239
METHOD OF PREPARING POLYVINYL CHLORIDE PARTS FOR ULTRASONIC WELDING

Horst Rager, Nurnberg; Herbert Röhrig, Schwarzenbruck-Gsteinach, and Armin Hirschel, Fischbach, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Division of Ser. No. 240,416, April 3, 1972, abandoned. This application Feb. 6, 1973, Ser. No. 329,965
Int. Cl. B32b *31/16*
U.S. Cl. 156—73.1 **4 Claims**



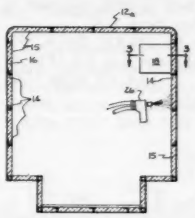
1. Method of making plastic components comprising the steps of:
   providing a mixture of 100 parts of a soft PVC, of at least 25 parts acrylate resin and additional filler material;
   making parts from the mixture of such contour so as to complement each other with regard to the overall contour of the components to make, each such component to consist of at least two parts; and
   joining the respective complementary parts by ultrasonic welding for obtaining each of the components.

3,879,240
METHOD OF MAKING A UNITARY CAMPER STRUCTURE

Raymond W. Wall, 10265 S.E. Columbus, Albany, Oreg. 97321

Filed Aug. 17, 1973, Ser. No. 389,256
Int. Cl. B32g *31/14*
U.S. Cl. 156—78 **7 Claims**

1. A method for making a unitary camper body which comprises the steps of:
   a. forming an impact-resistent exterior shell;
   b. mounting said exterior shell on a preformed skeletal reinforcing framework thereby forming a self-contained female mold;
   c. spraying a first layer of polymeric foam into said mold and over substantially the entire inner surface thereof, said foam layer curing in situ and adhering to and locking itself together with said shell and framework, respectively; and
   d. thereafter, before said first layer has fully cured, spraying a second layer of polymeric foam over substantially the entire exposed interior surface of said first layer, thereby

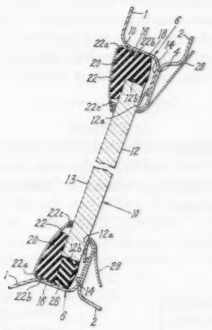


providing a protective interior facing for said camper body.

3,879,241
METHOD FOR INSTALLING A WINDOW IN A VEHICLE BODY

Douglas S. Butler, Bourne End, England, assignor to USM Corporation, Boston, Mass.

Filed Aug. 25, 1971, Ser. No. 174,718
Claims priority, application United Kingdom, Sept. 12, 1970, 43695/70
Int. Cl. B60j *1/00;* **B29c** *19/06*
U.S. Cl. 156—108 **5 Claims**

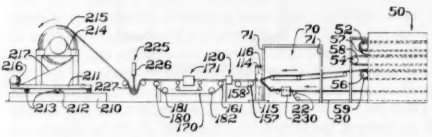


1. A method for installing a window in a vehicle body having an L-shaped flange defining a window opening in the body, the flange having a base portion extending inwardly of said vehicle body and a leg portion upstanding from the inward end of said base portion and projecting into the said window opening which comprises, (a) locating a window in position to obturate the window opening with marginal portions of a viewing surface of the window overlying and in engagement with the leg portion of the flange, directly or through an interposed internal trim means and with the peripheral edge surface of the window supported parallel to and spaced from the base portion of the flange; (b) positioning a preformed strip of tacky, deformable, heat curable synthetic polymeric material between the base portion of the flange and the peripheral edge surface of the window with the material in adhesive engagement with the peripheral edge surface of the window and the base portion of the flange, and (c) while maintaining the window in adhered relationship to said flange, heating the strip material to initiate curing thereof to a resilient state.

3,879,242
BELT COVERING APPARATUS

Claude Mullender, Barberton, and Norman E. Reinhart, Cuyahoga Falls, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 204,931, Dec. 6, 1971, Pat. No. 3,775,221.
This application Aug. 13, 1973, Ser. No. 387,670
Int. Cl. B29d 27/00
U.S. Cl. 156—137 4 Claims

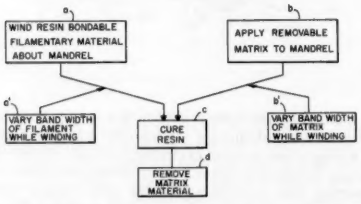


1. The method of covering a belt carcass comprising the steps of directing a belt carcass from a first storage reel toward a second storage reel; extruding a first thin continuous sheet of elastomeric material; cooling said first continuous sheet of material; laminating said cooled sheet of material directly to one of the surfaces of said moving belt as said carcass moves to said second reel; winding up said belt carcass with said sheet of laminated material thereon onto said second storage reel whose axis of rotation is horizontal and parallel to the axis of rotation of said first reel; pivoting said second reel 180° about a vertical axis that passes through the midpoint of said axis of said second reel; directing said wound up carcass from said second storage reel toward said first reel, with said one surface being the lower surface; extruding a second thin continuous sheet of elastomeric material; cooling said second thin sheet of elastomeric material; laminating said last mentioned extruded sheet of elastomeric material onto the other surface of said carcass to form a laminated belt; and winding up said covered belt carcass onto said first storage reel.

3,879,243
POROUS FILAMENT WOUND PIPE AND METHOD FOR MAKING SAME

Jonas Medney, 3504 Woodward St., Oceanside, N.Y. 11572

Filed Jan. 5, 1973, Ser. No. 321,205
Int. Cl. B32b 5/06
U.S. Cl. 156—155 8 Claims



1. A method for forming a well pipe having a porous wall that permits passage of a liquid therethrough, said method comprising the steps of:

a. winding a plurality of layers of resin bondable filamentary material onto a mandrel;

a' applying resin to the filamentary material;

b. changing the winding angle during the application of the filamentary material;

c. winding a predetermined quantity of a subsequently removable matrix material with the filamentary material whereby the porosity of the well pipe is determined by the volume of the applied matrix material;

d. changing the winding angle of the matrix material during the application thereof;

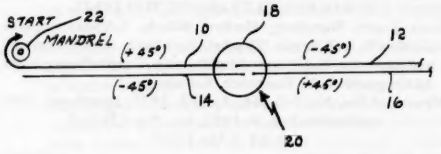
e. curing the resin; and

f. removing the matrix material whereby a well pipe having a wall with a predetermined porosity is obtained.

3,879,244
METHOD OF MAKING HIGH MODULUS GRAPHITE FIBER REINFORCED TUBES

Mike Varlas, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 18, 1973, Ser. No. 352,385
Int. Cl. B65h 71/00
U.S. Cl. 156—192 1 Claim



1. A method for fabricating a tubular structural member which comprises the steps of:

a. providing a ply of a graphite fiber-reinforced resin composite pre-cut to predetermined dimensions and consisting of a pair of sections butted together, each section having parallel running fibers oriented 45° from a zero degree longitudinal axis such that the fibers of each section are orthogonally oriented with respect to each other;

b. forming a flat-layup by combining a plurality of said oriented plies in juxtaposed relationship such that parallel running fibers of superposed layers generally have an orthogonal relationship to each other;

c. compressing said flat-layup at a temperature and pressure sufficient to compact said layers;

d. wrapping said compacted flat-layup around the outer surface of a tube forming mandrel;

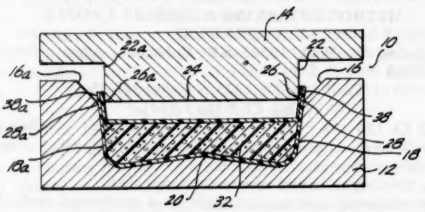
e. curing said wrapped layup at a temperature and pressure sufficient to form a tube around said mandrel; and

f. removing said mandrel.

3,879,245
METHOD OF MAKING COMPOSITE CORED STRUCTURES

William H. Fetherston, Bellevue, and Roger C. Teeter, Redmond, both of Wash., assignors to Composite Structures Corporation, Bellevue, Wash.

Filed June 27, 1972, Ser. No. 266,645
Int. Cl. B29c 3/00
U.S. Cl. 156—245 27 Claims



1. A method of preparing a structural part having a honeycomb core encased in a structurally reinforced resin in a pair of heated matched metal dies held in a molding press, the steps comprising:

a. covering a honeycomb core with a reinforcing material preimpregnated with a resin advanced to the "B" stage to form a lay-up part;

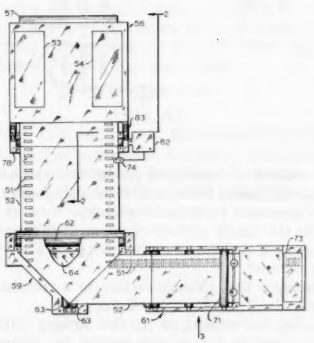
b. inserting the lay-up part into a heated metal die;
c. advancing a matching metal die until it makes contact with the lay-up part;
d. holding the dies against the lay-up part until the resin starts to set-up;
e. bringing the dies together to form a compression mold containing a formed part;
f. holding the dies together until the resin in the part is cured; and
g. covering the lay-up part with a layer of a thermoplastic resin prior to placing the part in the die.

3,879,246

LAMINATING APPARATUS AND METHOD

Robert J. Walker, 2942 Linden Ave., Berkeley, Calif. 94705

Filed Sept. 11, 1972, Ser. No. 287,678
Int. Cl. B32b 31/00
U.S. Cl. 156—265 16 Claims



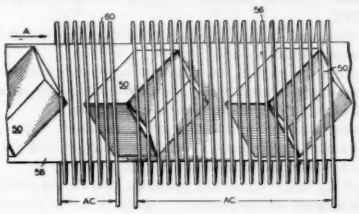
1. The method of continuously applying and bonding to a web strips of flexible, inelastic, bendable material having adhesive on a face thereof and which is capable of assuming a dead set folded position when bent to provide a twist type closure of the strips and the web, which comprises providing rotary drum means and rotary cutting means, continuously rotating said drum means and said cutting means, continuously feeding a parent sheet of the material between the drum means and the cutting means with the adhesive coated face on the outside with reference to the drum means; cutting successive strips on the drum means at a location at the periphery of the drum means, effecting retention of the strips the drum means as the strips are moved to a second location, continuously moving the web in engagement with the drum means at said second location, at said second location applying intermittent pressure to the web to intermittently pinch the web into driving and non-driving engagement with the drum means to thus effect transfer of successive strips to the web at the intervals of such pinchings and to intermittently relieve stress imposed on the web during successive pinchings when the peripheral velocity of the drum means varies from the feed velocity of the web.

3,879,247

METHOD OF HEAT SEALING AND HOLDING PACKAGE CLOSURE ELEMENTS

John W. Dickey, Standardsville, Va., assignor to Harrington-Research Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 164,496, July 20, 1971, Pat. No. 3,730,804, which is a continuation of Ser. No. 754,029, Aug. 20, 1968, abandoned. This application Apr. 2, 1973, Ser. No. 346,764The portion of the term of this patent subsequent to May 1, 1990, has been disclaimed.
Int. Cl. B29c 27/04; B65b 7/00
U.S. Cl. 156—272 6 Claims



1. A method of heat sealing a pair of closure elements of a package wherein at least one of said elements of the pair includes a heat softenable material and at least one of said elements of the pair includes magnetic susceptible material comprising heating said pair of elements to soften the heat softenable material and while softened holding said pair of elements under internal pressure therebetween until the heat softened material has hardened by subjecting said elements to a high frequency alternating current to soften the heat softenable material and low frequency alternating current producing magnetic fields to hold said pair of elements under internal pressure.

3,879,248

METHOD OF BONDING USING URETHANE BASE PRESSURE SENSITIVE ADHESIVES

Donald O. Kest, 6258 Fairhaven Rd., Mayfield Heights, Ohio 44124

Division of Ser. No. 144,337, May 17, 1971, Pat. No. 3,743,617, which is a continuation-in-part of Ser. No. 843,750, July 22, 1969, abandoned. This application May 4, 1973, Ser. No. 357,083
Int. Cl. C09j 5/00; B32b 31/12
U.S. Cl. 156—289 16 Claims

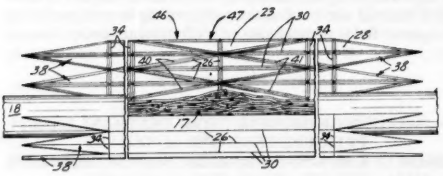
1. A process for making a urethane base pressure sensitive adhesive composition which comprises reacting
an isocyanate-reactive component having isocyanate-reactive functionality and which includes
a liquid diene telechelic polymer material having an average of at least about 1.6 essentially terminal, isocyanate-reactive functional groups per polymer molecule,
each of said essentially terminal functional groups being attached to one of the last three carbon atoms at an end of the polymer molecule with
a coreactive component having isocyanate functionality and which includes
an organic polyisocyanate material capable of coreacting with said isocyanate-reactive functional groups of said diene telechelic polymer material,
said polyisocyanate material having an average number of isocyanate functional groups greater than one,
said isocyanate functional groups being reactive with the isocyanate-reactive functional groups of the diene telechelic polymer material to increase the average molecular weight and modify the molecular structure of the diene telechelic polymer material,

the ratio of isocyanate functional groups to isocyanatereactive functional groups being in the range from about .75 to 1 to about 1.2 to 1,
in the presence of
a tackifying resin material,
to form an elastomer base material in the presence of said tackifying resin material,
said tackifying resin material being present in the amount of at least about 75 parts by weight of tackifying resin material per 100 parts by weight of said elastomer base material,
said tackifying resin material being sufficiently compatible with said elastomer base material that said tackifying resin material is soluble in said reactive component at 25°C,
so that said tackifying resin renders said elastomer base material tacky, and
wherein the step of reacting said isocyanate-reactive component with said coreactive component in the presence of said tackifying resin material comprises,
mixing said isocyanate-reactive component with said coreactive component in the presence of said tackifying resin material to form a mixture,
applying said mixture to a substrate, and curing said mixture in situ on said substrate.

3,879,249
CABLE ENCLOSURE

Manuel Filreis, Edina, and Aelred D. Driscoll, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 228,031, Feb. 22, 1972, abandoned. This application May 8, 1974, Ser. No. 468,203
Int. Cl. B29c *17/04*
U.S. Cl. 156—215 **1 Claim**

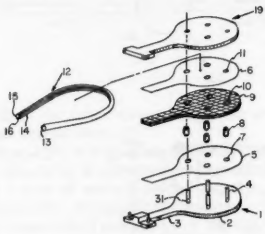


1. A method performed by a workman at a splice or termination along a cable for forming an enclosure of a desired size and shape about the splice or termination from a stiff, resilient, polymeric sheet grooved on at least one surface to reduce its thickness and define intersecting latticed sets of spaced parallel narrow strips connecting segments of the sheet including a first longitudinally extending set; a second set perpendicular to and intersecting the first set to define a rectangular pattern; and third and fourth sets oblique to each other, intersecting at the intersections of the first and second sets, and extending diagonally of the rectangular pattern so that the shape of each segment is triangular; said method comprising the steps of:
cutting said sheet along a strip of the first set spaced to provide a remaining sheet section having edges and a width between the edges measured along the second set of strips adapted to extend around the splice or termination;
cutting the sheet along strips of the third and fourth set to provide, on at least one end of the sheet section, adjacent triangular projections projecting from a common strip of the second set;
bending the strips of the first set to shape the sheet section into a generally cylindrical enclosure around the splice or termination with said edges of the sheet section in contact;
attaching together said contacting edges of the sheet section by applying an overlapping layer of tape of a joining strip adapted to frictionally receive and retain the contacting edges;
pressing the triangular projections toward the cable to bend the strip of the second set from which the triangular segments project until the tips of the triangular projections are deflected against the cable and their edges are closely adjacent; and
wrapping tape around the triangular projections to attach them together and to the cable.

3,879,250
METHOD OF MANUFACTURING PADDLE BALL RACQUETS

Paul B. Rankin, Jr., 1318 Skyridge Dr., Pittsburgh, Pa. 15241

Filed May 3, 1973, Ser. No. 356,711
Int. Cl. A63b *59/04*
U.S. Cl. 156—228 **4 Claims**



3. A method of making a paddle ball racquet having a handle portion and a blade portion including a pair of striking surfaces separated by a honeycomb-like network which extends into the handle portion of the racquet comprising:
A. preparing one side of each striking surface with a bonding material;
B. placing a first striking surface in a template with the unprepared side adjacent the template;
C. placing the network on the first striking surface;
D. extending an edging strip around the perimeter of the first striking surface;
E. placing a second striking surface on the network with the prepared side against the network;
F. placing a second template on said second striking surface;
G. applying an inital pressure to said surfaces and network;
H. sequentially applying pressure to said edging strip to form said strip around the periphery of said striking surfaces in contact with said surfaces;
I. applying a final pressure to said striking surfaces, edging strip and network while heating the same for a sufficient time and temperature to cause said elements to bond; and
J. completing said racquet by trimming said edging strip and applying a handle grip thereto.

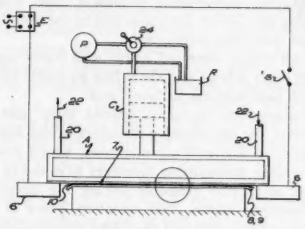
3,879,251
APPARATUS FOR PRODUCING LAMINATES REQUIRING THE APPLICATION OF HEAT

Robert Edward Ingham, Burton Leonard, England, assignor to R. E. Ingham & Co., Limited, Burton Leonard, Harrogate, England

Filed Dec. 4, 1972, Ser. No. 312,036
Claims priority, application United Kingdom, Dec. 7, 1971, 56658/71
Int. Cl. C09j *5/06*
U.S. Cl. 156—311 **3 Claims**

1. A method of laminating a thermoplastic sheet to the wood surface of a base sheet, comprising the steps of

1. applying a thermoplastic adhesive between the wood surface and the thermoplastic sheet,
2. clamping the sheets together between a first press platen constituting a heat sink and a second press platen,
3. applying electrical power to a flat sheet-like electrical heating element situated between one of the sheets and the adjacent platen, the electrical power being in the



range of 4 to 8 KVA per square foot of heating element area, and the electrical power being applied for a period of 4 to 18 seconds,

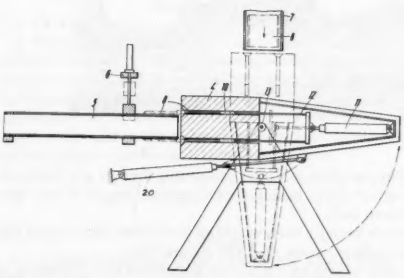
4. and cooling the laminated sheets while they are clamped between the platens by cutting off the electrical power to the heating element and allowing the heat to drain from the laminate into the heat sink platen.

3,879,252

APPARATUS FOR APPLYING REINFORCING SLEEVE

Werner Vossen, Neckarsteinach, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 4, 1973, Ser. No. 347,543
Int. Cl. B29d *3/00*
U.S. Cl. 156—423 **6 Claims**



1. Apparatus for applying a sleeve onto a tube, comprising:

a horizontal movable carriage;

means for holding a tube in horizontal disposition, so that the axis of the tube is parallel to a path, along which the carriage can be moved;

a receptacle with heating chamber for heating a sleeve when in the chamber and mounted on the carriage for pivoting on a horizontal axis and assuming a first upright position for receiving a sleeve for heating and a second horizontal position in coaxial alignment with the tube as held by the means for holding, the carriage provided for moving in and parallel to the axis of said tube; and

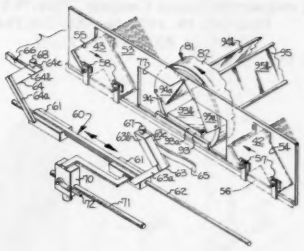
an ejector mechanism on the receptacle and extending into the receptacle for ejecting the sleeve from the receptacle and pushing the sleeve onto the tube when the receptacle has the second disposition.

3,879,253

APPARATUS FOR FORMING CORNER PADS

Brendan L. Doll, Patterson, N.C., assignor to Cellu Products Company, Patterson, N.C.

Division of Ser. No. 36,332, May 11, 1970, Pat. No. 3,725,170.
This application Oct. 3, 1972, Ser. No. 294,647
Int. Cl. B32b *31/00*
U.S. Cl. 156—443 **8 Claims**



1. Apparatus for forming a corner pad for protecting the corners of furniture or the like utilizing a plurality of plies, each of which is adapted to be folded into a trihedral angle arrangement with two edges being brought into abutting relation, said apparatus comprising,

forming means adapted to receive the plies one at a time and for successively forming the plies into trihedral angle arrangements and for successively placing the formed plies in contiguous, nesting relationship with the attitude of selected plies being varied so that the abutting edges of the plies are out of registry, and

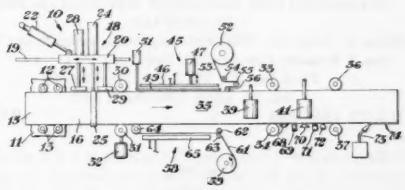
means operatively associated with said forming means for applying adhesive to at least one of the contiguous surfaces of adjacent plies to secure the nested plies together to maintain the same in a collective trihedral angle arrangement.

3,879,254

FABRICATION APPARATUS FOR BUTT JOINING FOAM PLASTIC BILLETS

Robert A. Hay, II, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 1, 1972, Ser. No. 302,835
Int. Cl. B31f *1/00;* **B29c** *27/06*
U.S. Cl. 156—461 **7 Claims**



1. An apparatus for the butt joining of foam plastic billets, the apparatus comprising in cooperative combination

a first conveying means, adapted to receive and continuously convey foam billets having a longitudinal axis

a heat sealing means to butt weld adjacent ends of said foam billets into a single length foam billet, the heat sealing means being movable generally in a direction parallel to the longitudinal axis of said foam billets, the heat sealing means having a platen and means to dispose the platen adjacent to or retracted from adjacent ends of foam billets being conveyed, a second conveying means for the foam billet disposed adjacent the platen of the heat seal-

ing means and remote from the first conveying means, a first laminating means

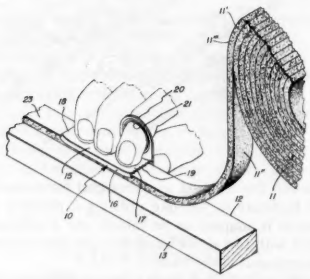
to apply a desired reinforcement to at least a portion of one face of the butt joined foam billet.

3,879,255

SEALANT HAND APPLICATOR

Richard H. Mason, and Curtis W. Mayott, both of Glen Falls, N.Y., assignors to Norton Company, Troy, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,784
Int. Cl. B32b *31/18, 31/20*
U.S. Cl. 156—527 **5 Claims**



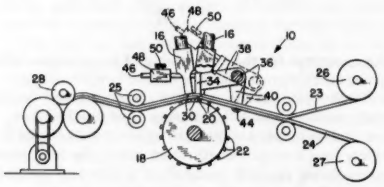
1. Applicator for application of a foam sealant adjacent to a straight edge of a desired substrate comprising an elongated pressure plate having ends which are slightly turned up for smooth sliding pressure engagement with the sealant, a serrated cutting edge on at least one end of the pressure plate, an edge guide extending between the ends of, fixed to and dependent from one side of said pressure plate for sliding engagement with said straight edge, a holding means associated with and extending from said edge guide for holding the applicator during use, and a sealant guide extending between the ends of and fixed to the pressure plate, spaced from said edge guide and dependent perpendicularly from said pressure plate and in the same direction as said edge guide to provide an elongated channel adjacent the pressure plate and between the spaced guides through which the sealant passes whereby said sealant is maintained in position as applied along said straight edge.

3,879,256

APPARATUS FOR VIBRATION WELDING OF SHEET MATERIALS

Edgar C. Rust, Jr., Williamstown, Mass., assignor to Crompton & Knowles Corporation, New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,460
Int. Cl. B06b *3/00;* **B23k** *1/06*
U.S. Cl. 156—580 **9 Claims**



1. Apparatus for joining two or more sheet-like elements, at least one of which contains a thermoplastic material comprising:

a. a frame;

b. means to advance the sheet-like elements to be joined from a source of supply;

c. a plurality of spaced ultrasonic vibration transmitting members mounted within said frame, each having a working surface in contact with one side of said sheet-like elements, each member being offset from adjacent members in the longitudinal direction of said sheet-like elements to form at least first and second parallel rows of vibration transmitting members, said rows extending along axes which are transverse to the longitudinal axis of said sheet-like elements;

d. anvil means mounted within said frame and located on the other side of said sheet-like elements for cooperating with said working surfaces; and

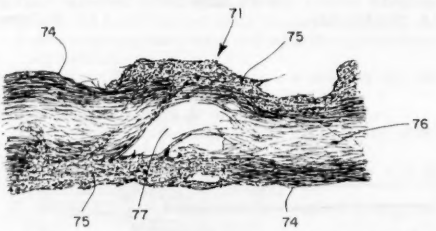
e. Compression members spaced from, and located between, the transmitting members of the first row of said vibration transmitting members, which row is the first vibration transmitting members to come in contact with said sheet-like elements during the operation of said advancing means, said members being in compressive engagement with said sheet-like elements along the longitudinal axis of said first row for maintaining said sheet-like elements substantially uniformly flat across the entire width thereof.

3,879,257

ABSORBENT UNITARY LAMINATE-LIKE FIBROUS WEBS AND METHOD FOR PRODUCING THEM

Victor R. Gentile, Brookhaven; Richard R. Hepford, Folcroft, both of Pa.; Nicholas A. Jappe, Claymont, Del.; Clifford J. Roberts, Jr., Turnersville, N.J., and Gunnar E. Steward, Media, Pa., assignors to Scott Paper Company, Delaware County, Pa.

Filed Apr. 30, 1973, Ser. No. 356,052
Int. Cl. B31f *1/12*
U.S. Cl. 162—112 **34 Claims**



1. Fibrous sheet material comprising a single-ply laminate-like web of fibers having a predominate length of less than one-fourth inch,

the web having a basis weight of from about 20 to about 100 pounds per ream of 2,880 square feet,

the web having an undulating disposition due to creping of the web and having first and second strong, abrasion-resistant, laminate-like surface regions interconnected by a soft, absorbent, laminate-like central core region,

the central core region generally having less fiber concentration than the surface regions to provide greater bulk, softness and absorbency to the web,

each surface region having bonding material disposed throughout to bond the fibers in that surface region together into a strong network, the bonding material in each surface region extending from about 10 percent to about 60 percent through the thickness of the web and being substantially unconnected to the bonding material extending into the web from the other side of the web,

the bonding material in the first surface region being disposed in a fine, spaced-apart pattern occupying from about 15 percent to about 60 percent of the surface area of the finished web product on the first surface region side of the web, and

the areas in the first surface region where the bonding material is disposed being finely creped.

16. Method of forming a single-ply laminate-like fibrous web, comprising the steps of:

a. providing a fibrous web of fibers having a predominate length of less than one-fourth inch and having a basis weight of from about 16 to about 80 pounds per ream of 2,880 square feet;

b. applying to the first side of the web a first bonding material which penetrates from about 10 percent to about 60 percent through the thickness of the finished web product and forms bonded web portions in which fibers are bonded together by the bonding material to form a strong, abrasion-resistant laminate-like surface region;

c. applying to the second side of the web a second bonding material in a fine, spaced-apart pattern arrangement which covers between about 15 percent and about 60 percent of the surface area of the second side of the finished web product and penetrates from about 10 percent to about 60 percent through the thickness of the finished web product and which does not substantially interconnect with the first bonding material and which forms bonded web portions in which fibers are bonded together by the bonding material to form a strong, abrasion-resistant, laminate-like surface region;

d. adhering the bonded portions of the second surface of the web to a creping surface by use of the second bonding material; and

e. creping the web from the creping surface.

3,879,258

PAPER CONTAINING A THERMOSETTING CYCLO-1,1-IALLYLGUANIDINE POLYMER AS WET STRENGTHENING AGENT

Hans Peter Panzer, Stamford, Conn., and Louis Vincent McAdams, East Greenwich, R.I., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 107,456, Jan. 18, 1971, Pat. No. 3,790,537. This application Oct. 1, 1973, Ser. No. 402,437

Int. Cl. D21h *3/52*

U.S. Cl. 162—166 **6 Claims**

1. Paper composed of water-laid cellulose fibers bonded together by a small but effective content therefor of a water-soluble cationic polymer consisting essentially of cyclo-1,1-diallylguanidine linkages having a sufficient number of glyoxal substituents to be thermosetting, said polymer being in thermoset state; said polymer being substantially formed by free radical polymerization of 1,1-diallylguanidine.

3,879,259

CORE MODULE FOR NUCLEAR REACTORS

Nils Olof Persson; Antti Suvanto; Lars Törnblom, all of Vasteras, Sweden, and Ingvald Haga, Gjettum, Norway, assignors to Aktiebolaget ASEA-ATOM, Vasteros, Sweden, by said Persson, Suvanto and Törnblom

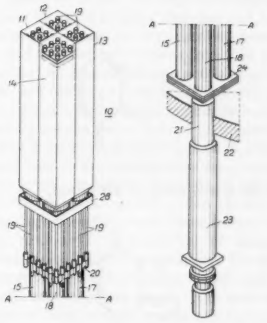
Filed May 15, 1973, Ser. No. 360,540

Claims priority, application Sweden, May 17, 1972, 6422/72

Int. Cl. G21c *7/08*

U.S. Cl. 176—36 R **2 Claims**

1. A core module for a nuclear reactor having a control rod drive, said module comprising a plurality of fuel assemblies, a plurality of core support tubes, each fuel assembly resting upon one of the core support tubes, a core support grid to which the core support tubes are attached, a plurality of control rods associated with the fuel assemblies, a first means for operatively connecting all of the control rods to the control rod drive, means to supply fluid to said core support tubes, and second means connecting the interiors of said core support tubes to the interiors of said fuel assemblies, said second means including throttled openings, said first connecting means including a member operatively engaging the control



rods, and third means guiding said member on the outsides of the core support tubes.

3,879,260

PROCESS FOR PRODUCTION OF RIBOSIDES OF NUCLEIC ACID BASE DERIVATIVES AND ANALOGUES THEREOF

Osamu Kanamitsu, Saitama, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

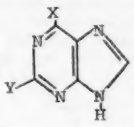
Filed Mar. 5, 1973, Ser. No. 338,383

Claims priority, application Japan, Mar. 8, 1972, 47-23125; May 11, 1972, 47-46614

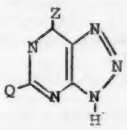
Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **6 Claims**

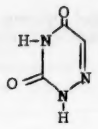
1. A process for the production of a riboside of a nucleic acid base derivative or an analog thereof selected from the group of compounds consisting of

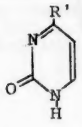


wherein X is a H atom or OH group and Y is H atom, alkyl group, alkylthio group, Cl atom or OH group, exclusive of when both X and Y are OH and when X is OH and Y is H;

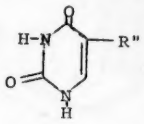


wherein Z is a OH or NH_2 group and Q is H atom or OH group;

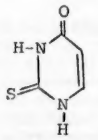




wherein R' is a H atom or SH group;



wherein R'' is a OH group, F, Cl, Br or I atom or NO_2 group; or,



which comprises, culturing aerobically a microorganism which belongs to the genus Flavobacterium and possesses the ability to produce said riboside from said nucleic acid base derivative or an analog thereof for from one to four days at a temperature of from 20° to 35°C. in a medium containing carbon sources, nitrogen sources and inorganic salts capable of being utilized by the said microorganism, then either (1) allowing the thus produced Flavobacterium cells to remain in the medium in contact at a temperature of from 20° to 35°C for from one to four days with said nucleic acid base derivative or said analog thereof or (2) separating the thus produced Flavobacterium cells from said medium and contacting them with a solution containing said nucleic acid derivative or analog thereof, carbohydrate, magnesium ion and buffer at 20° to 35°C for one to four days, thereby producing said riboside and thereafter separating the accumulated riboside.

3,879,261

PROCESS FOR PRODUCTION OF YEAST CELLS FROM BUTANOLS

Shun-ichi Matsumoto, Kamakura, and Eiji Sato, Zushi, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jan. 31, 1974, Ser. No. 438,390

Claims priority, application Japan, Feb. 2, 1973, 48-20237; Apr. 11, 1973, 48-40371

Int. Cl. C12b *1/00*

U.S. Cl. 195—49 **11 Claims**

1. A process for preparing yeast cells which comprises growing at least one yeast strain belonging to a genus selected from the group consisting of genera Candida and Trichosporon in a culture medium containing at least one butanol selected from the group consisting of normal and secondary butanol, and harvesting the yeast cells.

3,879,262

DETECTION AND DETERMINATION OF HAPTENS

Antonius Hermanus Wilhelmus Maria Schuurs, and Bauke Klaas Van Weemen, both of Oss, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed May 1, 1973, Ser. No. 356,223

Claims priority, application Netherlands, May 11, 1972, 7206373

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **10 Claims**

1. Process for the detection and determination of a hapten being a protein-free substance which is not capable of stimulating antibody formation but which reacts with antibodies by means of a binding protein capable of reacting to bind said hapten specifically, comprising the steps of:

a. providing a given quantity of the coupling product of said hapten and an enzyme;

b. providing a corresponding given quantity of a specific binding protein capable of reacting to bind said hapten and said hapten-enzyme coupling product and being an antibody produced by injecting the coupling product of the hapten and a high molecular substance capable of stimulating antibody formation into the blood of an animal and subsequently isolating the antibody from the animal blood;

c. the nature of the coupling in the coupling product of the hapten and enzyme and the coupling product of the hapten and high molecular substance being chemically different as a result of either (a) a chemically different bond or bridge, (b) chemically different haptens which are immunologically related, (c) coupling via another position of the hapten molecule, or (d) combinations of (a), (b) and (c);

d. contacting a sample of a fluid containing the hapten to be determined with said coupling product of the hapten and enzyme and said binding protein to form a reaction mixture;

e. separating the hapten-enzyme coupling product bound to the binding protein from the unbound hapten-enzyme coupling product; and

f. determining the enzyme activity of a separated portion, which activity is a measure of the quantity of hapten to be determined.

3,879,263

METHOD FOR THE DETERMINATION OF AMYLASE

Thomas H. Adams, Mission Viejo, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 6, 1973, Ser. No. 394,823

Int. Cl. C12k *1/04*; **C07g** *7/02*

U.S. Cl. 195—103.5 **15 Claims**

1. A process for determining the pancreatic α-amylase content of a sample comprising the steps of adding a substrate selected from the group consisting of maltotetraose and maltopentaose to a solution containing a measured amount of the sample and determining the glucose evolved by the reaction between the pancreatic α-amylase and the substrate while maintaining the solution at a substantially constant temperature and a substantially constant pH.

3,879,264

OIL RECLAIMER

William R. Seelbach, Orchard Park, N.Y., assignor to Petroleum Reclaiming Corporation, Buffalo, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,790

Int. Cl. C10c *1/20*

U.S. Cl. 196—46.1 **2 Claims**

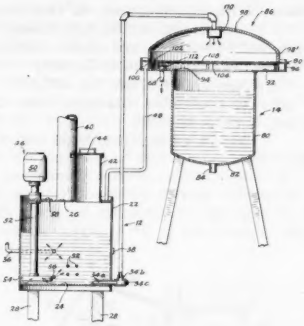
1. An apparatus for refining used lubricating oil comprising in combination:

a heating tank having an opening through a wall thereof for receiving a batch including a charge of used oil to be refined and a charge of oil refining solids;

an electrically powered immersion heater unit including a plurality of blade heating elements supported to extend inwardly through a wall of said heating tank for heating said batch whereby to effect heat purification of said used oil;

a first immersion pump means including a pump housing defining an inlet and an outlet;

a mounting plate fixed to a top wall of said heating tank for removably suspending said pump housing within said heating tank to position said inlet in a downwardly facing relationship closely adjacent a bottom wall of said heating tank and to position said outlet to direct portions of said



batch, removed from adjacent said bottom wall through said inlet, upwardly within said heating tank for flow transversely of and in heat exchange surface scrubbing relationship with said blade elements;

a clean oil storage tank including a filtering chamber enclosing filter means arranged above a clean oil storage chamber, said clean oil tank comprising

a. an upwardly open tank portion defining said clean oil storage chamber;

b. an essentially square shallow pan having a bottom wall formed with a central aperture and a side flange upstanding from marginal edges of said pan bottom wall, said tank portion being fixed to and extending vertically below said pan bottom wall in concentrically disposed flow communication with said central aperture;

c. a support ring extending from an upper surface of said pan bottom wall concentrically outwardly of said central aperture;

d. a sealing ring upstanding from an upper surface of said pan bottom wall vertically above said support ring and in engagement with the radially outer surface thereof;

e. a disc shaped screen element supported by said support ring inwardly of said sealing ring;

f. an essentially square sheet of filter paper removably supported on said screen element and extending horizontally outwardly of said sealing ring into proximity with said pan side flange; and

g. a closure hingedly secured to said pan adjacent one marginal edge thereof for vertical swinging movement between closed and open positions, said closure having an annular sealing flange arranged to cooperate with said sealing ring to clampingly secure said sheet of filter paper therebetween, said closure and said screen element cooperating to define said filtering chamber;

a transfer conduit having an inlet end communicating with the bottom of said heating tank and having an outlet end communicating with said filtering chamber through a central portion of said closure;

second pump means disposed exteriorly of said heating and storage tanks; and

a control system operable in succession to energize said first pump means and said heater unit to effect circulation of said batch and heat purification of said used oil within said heating tank and to thereafter selectively connect said second pump means to said clean oil storage chamber whereby to establish a vacuum therewithin for transferring said batch from said heating tank through said transfer conduit into said filtering chamber and for transferring clean oil from said filtering chamber through said filter paper and said screen element into said clean oil storage chamber, while said refining solids of said batch transferred to said filtering chamber are collected on said filter paper as a cake, said control system including temperature sensing means responsive to a predetermined high temperature within said heating tank at which heat refining of said used oil is completed for deenergizing said heater unit to permit initiation of cooling of said heating tank and to connect said second pump means to said clean oil storage chamber, said temperature sensing means being responsive to reduction of temperature within said heating tank to a predetermined low temperature for deenergizing said first pump means and for disconnecting said second pump means from said clean oil storage chamber, said second pump means having an outlet thereof connected into said heating tank whereby to establish a continuous flow path, when said second pump means is connected to said clean oil storage chamber, successively through said second pump means, said heating tank, said transfer conduit, said filtering chamber, said cake, said filter paper, said screen element and said clean oil storage chamber, and said low temperature being correlated with the period of time said second pump means is connected to said clean oil storage chamber to insure drying of said cake by gas passing along said path.

3,879,265

APPARATUS FOR EVAPORATING LIQUIDS

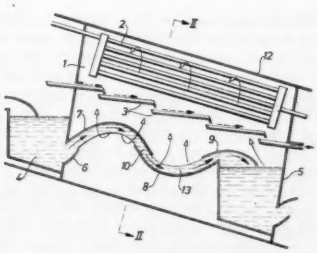
Peter Heinrich Erwin Margen, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Aug. 14, 1973, Ser. No. 388,269

Claims priority, application Sweden, Aug. 28, 1972, 11131/72

Int. Cl. B01d *1/22, 3/00, 3/02*

U.S. Cl. 202—173 **9 Claims**



1. Evaporation apparatus particularly suitable for evaporating salt water under low pressure in a desalination plant, said apparatus comprising, in combination, liquid emitter means, means for collecting liquid, guide vane means interposed between said liquid emitter and liquid collector means defining therebetween an undulating liquid film flow path, a housing enclosing the guide vanes and forming a flash chamber said guide vane means consisting essentially of a plurality of individual guide vanes each having a curved configuration defining a concave inner surface having a pair of ends, said guide vanes being serially arranged end-to-end along said flow path with said concave inner surface of each being positioned

in facing relationship on an opposite side of said liquid flow path relative to the concave inner surface of each next adjacent guide vane, said concave inner surfaces having portions proximate said ends extending in overlapping facing relationship with coextending end portions of the concave inner surface of each next adjacent guide vane, said undulating flow path being defined by said concave inner surfaces of said guide vanes which extend discontinuously on opposite sides of said liquid flow path, whereby said film of liquid flowing therealong from said liquid emitter means to said liquid collecting means may be subjected to essentially oppositely directed centrifugal forces against contacting guide vanes with exposure of said film on the unconfined side thereof opposite each of said concave inner surfaces operating to produce vapor which becomes separated from said flowing liquid film, said vanes occupying less than the transverse width of the flash chamber to allow vapors to escape from the undersides of the concave-down exposed liquid surfaces.

3,879,266

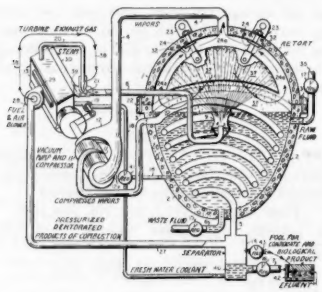
DISTILLATION APPARATUS

George C. Sorensen, 589 S.E. 4th, Ontario, Oreg. 97914

Continuation-in-part of Ser. No. 141,861, Nov. 6, 1972, Pat. No. 3,779,005, Continuation-in-part of Ser. No. 304,125, Nov. 6, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,296

Int. Cl. B01d *3/08, 3/28*

U.S. Cl. 202—236 **4 Claims**



1. A distillation apparatus as characterized for distilling raw fluid of salt water or the like comprising an upper and lower shell seperably and sealably aligned; a sump in the lower said shell for containing a controllable level of said raw fluid; at least one barely submerged exhaust nozzle and venturi cooperating with a communicating combustion engine providing hot products of combustion blasting energy for spraying said raw fluid upwardly against a splash shield, causing a great particulation of said raw fluid, said splash shield is securely spaced away from the upper part of said shell providing a communicating vapor zone into which said hot products of combustion and commingling vapor from said raw fluid are drawn by a communicating combined vacuum pump and compressor, driven by the said combustion engine, for incorporating said commingling hot products of combustion and raw fluid vapor into a liquid condensate in a communicating condenser secured in the said raw fluid sump, providing compression elevated heat to surrounding said raw fluid; a seperator having communication with said condenser that is capable of seperating some of the pressurized dehydrated gaseous products of combustion from said liquid condensate means for leading said gaseous products of combustion to and powering a turbo blower for charging said combustion engine with fuel and air; means for leading condensate from said seperator to a mixing valve having communication with said sump where a tolerable amount of raw fluid is mixed with said fluid and led to a pump for injecting into cooling passages formed around said combustion engines hot spots; means for leading hot fluid from said cooling passages flashed as steam jetting downstream through a mixing ejector capable of drawing exhaust gas from said turbo blower for recycling into said hot products of combustion for supplementing said blasting energy; means for regulating pressure in the seperator and means for leading said condensate from said seperator to a pond for biological production; pressure regulating means for reducing pressure of excess dehydrated gas from said seperator for leading to and bubbling into said pond condensate.

3,879,267

SHED FOR THE DISCHARGE SIDE OF A COKE OVEN BATTERY

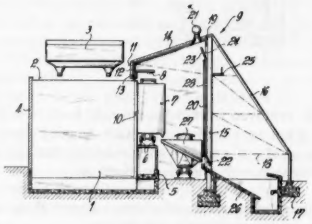
Gerd Nashan, 24 Hirschkampstrasse, 42 Oberhausen; Josef Volmari, 16 Heidelbeerweg, 463 Bochum; Helmut Peter, 20, Am Hagen, 4619 Oberaden, and Gunter Batora, 4, Lanstroper Strasse, 4628 Lunen, all of Germany

Filed Nov. 21, 1973, Ser. No. 417,818

Claims priority, application Germany, Nov. 22, 1972, 2257214; Dec. 7, 1972, 2259889

Int. Cl. C10b *27/04, 35/00*

U.S. Cl. 202—263 **9 Claims**



1. A shed structure for covering the discharge side of a coke oven battery, comprising an upright wall spaced laterally from the coke oven battery and forming with the side of the oven battery an enclosure, a roof inclining upwardly and outwardly from the top of the oven battery to said upright wall, a dust and gas extraction system located within the shed structure at the ridge or junction between said roof and said upright wall, said upright wall including vertical reinforcing pillars extending throughout the height of the wall and upon which said roof rests, and tie bars supporting said roof and wall inclining downwardly and away from said ridge.

3,879,268

METHOD FOR SEPARATING THIOPHENE FROM MIXTURES THEREOF WITH BENZENE

Klaus Wehner, Leuna; Werner Kisan, Halle-Neustadt, and Gerald Kunz, Merseburg-West, all of Germany, assignors to Veb Leuna-Werke "Walter Ulbricht", Leuna, Germany

Filed Oct. 23, 1973, Ser. No. 408,892

Int. Cl. B01d *3/40;* **C07c** *7/08, 7/10*

U.S. Cl. 203—53 **8 Claims**

1. In the method of separating thiophene from a mixture thereof with benzene in which the mixture is subjected to extraction with a solvent selective for the thiophene and the benzene and thiophene are recovered, the improvement in which the solvent comprises a N-alkyl-ε-caprolactam.

3,879,269
METHODS FOR HIGH CURRENT DENSITY GOLD ELECTROPLATING

Maurice Bick, South Orange, and Jean A. Lochet, Metuchen, both of N.J., assignors to Auric Corporation, Newark, N.J.

Continuation-in-part of Ser. No. 354,697, April 26, 1973, Pat. No. 3,833,488. This application Nov. 23, 1973, Ser. No. 418,228

Int. Cl. C23b *5/28*

U.S. Cl. 204—46 G **6 Claims**

1. A method for high current density gold electroplating of conductors comprising:

electroplating said conductor in an aqueous bath comprising an alkali metal gold cyanide, said gold being present from about 24 to 40 g/l calculated as the metal; as a brightener and efficiency-augmenting agent, from about 2 to 12 mg/l of trivalent arsenic ion; additional conducting and buffering compounds including one or more partially neutralized acids, said compounds being present in concentrations appropriate in the presence of the remaining bath components to adjust the bath specific gravity to a desired level of from about 6° to 22° Baume, said level being above that which would be achieved in the absence of said compounds; and

the said electroplating of said conductor being conducted while maintaining a mean current density of at least 30 A.S.F., and for cumulative periods sufficient to cause the initially displayed efficiency of said bath to decline to approximate levels of 50 to 60 percent, whereat said efficiency stabilizes.

3,879,270
COMPOSITIONS AND PROCESS FOR THE ELECTRODEPOSITION OF METALS

Xavier Kowalski, Saint Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 10, 1974, Ser. No. 432,377

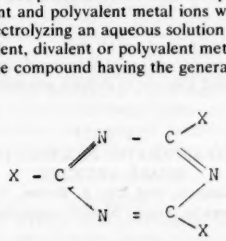
Int. Cl. C23b *5/02, 5/18, 5/46*

U.S. Cl. 204—52 R **16 Claims**

1. A cyanide-free process for the electrodeposition of monovalent, divalent and polyvalent metal ions which comprises the steps of electrolyzing an aqueous solution comprising

a. a monovalent, divalent or polyvalent metal ion, and

b. a cyanidine compound having the general formula



wherein X is selected from the group consisting of —OM, $—NH_2$ and halogen ions, where M is hydrogen or alkali metal ion, the concentration of (a) in said aqueous solution being from about 0.01 percent to 5 percent; the concentration of (b) being from about 0.01 percent to the limit of solubility; the pH of said aqueous solution being from about 7 to 12, and the temperature of said aqueous solution being from about 30° to 90°C.

3,879,271
PRODUCTION OF DIESTERS OF DICARBOXYLIC ACIDS BY ELECTROCHEMICAL CONDENSATION OF MONOESTERS OF DICARBOXYLIC ACIDS

Heinz Nohe, Meckenheim; Franz Wenisch, Frankenthal, and Hubert Suter, Ludwigshafen, all of Germany, assignors to B A S F Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Oct. 4, 1973, Ser. No. 403,614

Claims priority, application Germany, Oct. 4, 1972, 2248562

Int. Cl. C07b *29/06;* **C07c** *69/34, 67/00*

U.S. Cl. 204—72 **7 Claims**

1. A process for the production of diesters of dicarboxylic acids of six to 18 carbon atoms and alcohols of four to twelve carbon atoms wherein a monoester of a dicarboxylic acid of four to ten carbon atoms and an alcohol of four to twelve carbon atoms is electrochemically condensed at a current density of from 5 to 50 amps/dm² and a temperature of from 20° to 65°C in a 20 to 60% by weight solution in methanol which contains from 0.2 to 2 percent by weight of water in the presence of such an amount of a basic compound that the degree of neutralization is from 1 to 30 mole percent.

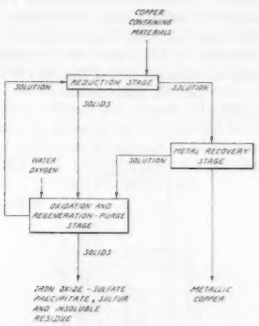
3,879,272
HYDROMETALLURGICAL PROCESS FOR THE PRODUCTION OF COPPER

George E. Atwood, and Charles H. Curtis, both of Tucson, Ariz., assignors to Duval Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 187,393, Oct. 7, 1971, Pat. No. 3,785,944. This application Jan. 14, 1974, Ser. No. 433,208

Int. Cl. C22d *1/16;* **C22b** *15/00*

U.S. Cl. 204—107 **16 Claims**



1. A hydrometallurgical process for the production of metallic copper comprising a reduction stage in which materials containing copper-iron sulfide ore concentrates are introduced into an aqueous chloride solution containing cupric chloride to solubilize part of the copper in said materials and reduce a substantial portion of the cupric chloride to cuprous chloride, the total chloride ion concentration relative to the water content of said chloride solution being maintained at the desired level to minimize precipitation of cuprous chloride in said solution by the addition of a saline metal chloride compound selected from the group consisting of potassium chloride, magnesium chloride, a mixture of magnesium chloride and potassium chloride; or a mixture of any of the foregoing with sodium chloride; a copper recovery stage in which metallic copper is recovered by reduction of the cuprous chloride in the solution from the reduction stage; and in which cupric chloride is regenerated; and an oxidation stage combined with a regeneration-purge stage to retard scaling of equipment in which the raffinate from the copper recovery stage is reacted with oxygen to form a solution containing ferric chloride which concurrently oxidizes the unreacted materials from the reduction stage to solubilize substantially all the remaining

copper in the materials, thereby forming a solution containing cupric chloride and ferric chloride, with the concurrent precipitation, by reaction of ferrous chloride with oxygen and hydrolysis, of compounds including those having the iron-sulfate ratios of jarosite, to thereby remove a substantial portion of the iron as well as sulfate ions and other impurities from the chloride solution; and recycling the chloride solution containing cupric chloride to the reduction stage.

3,879,273

PROCESS FOR THE MANUFACTURE OF ALUMINIUM ELECTRODES FOR ELECTROLYTIC CAPACITORS

Martin Mühlhäusser, Singen, Hohentw, and Christian Roth, Gottmadingen, both of Germany, assignors to Aluminium-Walzwerke Singen GmbH, Singen/Hohentw, Germany

Filed Nov. 7, 1973, Ser. No. 413,447

Claims priority, application Germany, Nov. 11, 1972, 2255309

Int. Cl. C01b *13/04*

U.S. Cl. 204—129.75 **1 Claim**

1. A process for the manufacture of aluminum electrodes, for use in electrolytic capacitors, comprising the steps of

continuously casting an aluminum strip having a thickness of between about 1 mm and about 40 mm;

rolling said aluminum strip to its final thickness; and

etching said rolled strip electrolytically in a chloride containing electrolyte.

3,879,274

ELIMINATION OF HARMFUL SUBSTANCES FROM MOLTEN SALT USED IN THE ION EXCHANGE TREATMENT OF GLASS ARTICLES

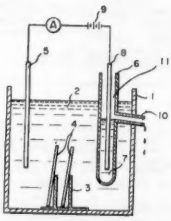
Hiromi Matsumori, Nishinomiya; Nobuyoshi Ohsato, Itami, and Jun Hasegawa, Takarazuka, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Dec. 6, 1972, Ser. No. 312,502

Claims priority, application Japan, Dec. 9, 1971, 46-99974

Int. Cl. C01c *21/00*

U.S. Cl. 204—130 **4 Claims**



1. In a method for chemically strengthening glass articles by use of a molten salt, said chemical strengthening consisting of:

a. contacting the glass articles at an elevated temperature but below its deformation temperature with a molten salt containing an alkali metal R′ having a larger ion radius than that of the alkali metal R contained in the glass articles to form thereon a surface layer resulting from the exchange of ions of the aforesaid alkali metals R and R′;

b. eliminating from said molten salt the thermally decomposed products which are detrimental to the strengthening of the glass articles;

the improvement comprising disposing an anode and a cathode in a bath of molten salt maintained at an elevated temperature, with the proviso that said cathode is disposed in a small chamber partitioned in isolation from the rest of the molten salt bath by means of a partitioning wall, said wall being made of a material that is not corroded by the molten salt at said elevated temperature, said wall having penetrable pores, holding molten salt in its body, and capable of passing the molten salt, the size of said pores being so minute that a great resistance is demonstrated to the diffusive flow of said detrimental substances, said material being also conductive as a result of the ion conductivity through the molten salt held in said pores; and applying a voltage across said anode and cathode to cause the flow of an electric current therebetween whereby said detrimental substances are accumulated in said small chamber, and then eliminating the detrimental substances concentrated around the cathode.

3,879,275

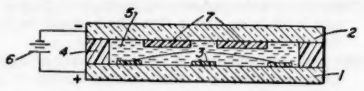
POLYMERIZATION

Paul J. Cressman, Fairport; William W. Limburg, Penfield, both of N.Y., and Louis A. Pilato, Bound Brook, N.J., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 858,062, Sept. 15, 1969, abandoned. This application Apr. 28, 1972, Ser. No. 248,770

Int. Cl. C07b *29/06*

U.S. Cl. 204—165 **7 Claims**



1. The method of polymerizing comprising the steps of:

a. providing between and in contact with the surface of at least two electrodes, a liquid, polymerizable composition comprising unsaturated vinyl containing compounds capable of undergoing liquid to solid addition polymerization in response to charge injection from a conductive surface; and

b. in the absence of chemical initiators, catalysts and electrolytes, applying an electrical field across said polymerizable composition until at least a portion of said polymerizable composition becomes a solid by charge injection polymerization.

3,879,276

ELECTROPHORETIC DEPOSITION OF SELENIUM

John D. Underwood, Bishop Stortford, and Philip F. E. Dutton, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 10, 1974, Ser. No. 439,814

Int. Cl. B01k *5/02*

U.S. Cl. 204—181 **11 Claims**

2. A method of electrophoretically depositing selenium comprising the steps of:

adding an aromatic reducing agent to a concentrated aqueous solution of selenium dioxide;

diluting said solution with a solvent other than water;

adding a trace of selenic acid; and

applying an electric potential between electrodes immersed in the diluted solution to deposit selenium at a cathode.

3,879,277

METHOD AND APPARATUS FOR ELECTROPAINTING SMALL ARTICLES

Franklin H. Guzzetta, and Roy A. Brown, both of Monroe, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

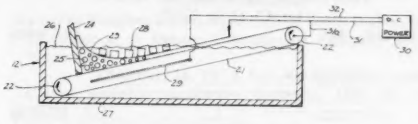
Filed Apr. 27, 1973, Ser. No. 355,032

Int. Cl. B01k *5/02*

U.S. Cl. 204—181 **11 Claims**

1. In that method of electropainting a large number of small articles which comprises the steps of providing a bath of electropainting solution containing suitable coating components, providing a first grid means for moving the articles through the bath, introducing the articles into the bath and onto the grid means, providing a source of suitable electric power, provid-

ing a first electrode for placing one charge on said articles and a second electrode for placing an opposite charge on said solution while said articles are in said bath, whereby the components of the solution will migrate to the articles, the improvement which comprises the steps of providing a second flexible grid means in said bath in position to be engaged by said articles, and sandwiching the articles between said first and second grid means while moving the articles through said bath.



3,879,278

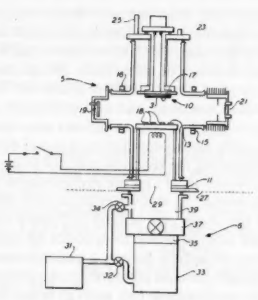
COMPOSITE CERMET THIN FILMS

Peter S. Grosewald, Youngstown, and Dennis G. Shirback, Lockport, both of N.Y., assignors to Airco, Inc., New York, N.Y.

Division of Ser. No. 56,128, July 6, 1970, abandoned, which is a continuation of Ser. No. 694,729, Dec. 29, 1967, abandoned. This application Dec. 21, 1971, Ser. No. 210,623

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **5 Claims**



1. An electrically resistive article including a substrate bearing thereon a thin electroconductive glaze film, said film comprising an amorphous uniform interdispersion of an insulating glaze phase and a conductive phase, said phases having been codeposited as said film by sputtering thereof from a fired glaze thick film comprising a conductive particulate component uniformly dispersed in a glass matrix, said thin film being below **10** microns and being further characterized by exhibiting conduction via quantum mechanical tunneling between adjacent conductive phase portions thereof.

3,879,279

ELECTRODE WITH EXCHANGEABLE MEMBRANE

Friedrich Gustav Karl Baucke, Mainz, Germany, assignor to Jenaer Glaswerk, Schott & Gen., Mainz, Germany

Filed Nov. 26, 1971, Ser. No. 202,416

Claims priority, application Germany, Dec. 3, 1970, 2059559

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 M **6 Claims**

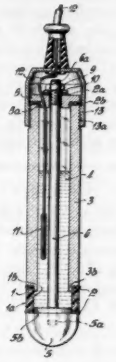
1. An electrode for measuring ion activities comprising:

A. an electrode shaft divided into

1. an upper portion, and

2. a lower portion,

B. an ion sensitive membrane between the upper and lower portions of the shaft, wherein the membrane is in the form of an annular ring, the top of the ring forming a fluid tight seal with the upper portion of the electrode shaft,



the bottom of the ring forming a fluid tight seal with the lower portion of the electrode shaft,

C. means for pressing the upper and lower portions of the electrode shaft against the ring in order to maintain said fluid seals.

3,879,280

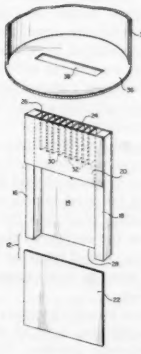
GEL SLAB ELECTROPHORESIS CELL AND ELECTROPHORESIS APPARATUS UTILIZING SAME

John I. Peterson, Falls Church, Va.; Andreas Chrambach, Bethesda, Md.; Julian W. Holland, Jr., Potomac, Md. 20854; William R. Dehn, Batson Rd., Spencerville, Md., and H. Douglas Swank, Slidell Rd., Boyds, Md., assignors to The United States of America as represented by the Secretary, Department of Health, Education and Welfare

Filed Apr. 16, 1974, Ser. No. 461,442

Int. Cl. B01k *5/00*

U.S. Cl. 204—299 **9 Claims**



1. A gel slab electrophoresis cell adapted for use in an apparatus for simultaneously electrophoretically separating the ionic components of a plurality of samples, said cell comprising a rear panel defining the rear wall of said cell, a pair of spacer means fixed to the opposite sides of the front face of said rear panel and extending along the entire length

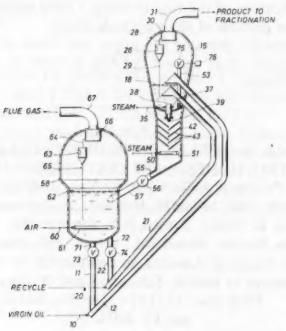
thereof thereby defining the side walls of said cell, an upper front panel fixed to said pair of spacer means and extending from the top of said cell partially along the length thereof, a lower front panel removably secured to said pair of spacer means and extending from the bottom of said upper front panel to the bottom of said cell, said upper front panel and said lower front panel thereby together defining the front wall of said cell, said rear, side and front walls thereby defining between them an open-ended elongated space for receiving a gel, and partition means fixed to said rear panel and said upper front panel between said spacer means and extending from the top of said cell to a point above the bottom of said upper front panel to thereby define a plurality of individual sample-receiving compartments within the upper portion of said cell.

3,879,281

FLUID CATALYTIC CRACKING

Henry B. Jones, and Dorrance P. Bunn, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 276,619, July 31, 1972, Pat. No. 3,826,624. This application Dec. 20, 1973, Ser. No. 426,888
Int. Cl. C10g *13/18*
U.S. Cl. 208—164 **3 Claims**



1. In a fluidized catalytic cracking process comprising a riser zone, a reaction vessel, a stripping zone vertically mounted below said reaction zone, and a regeneration zone wherein regenerated catalyst from said regeneration zone is contacted at cracking conditions with hydrocarbon oil charge in said riser zone, wherein catalyst and hydrocarbon vapors are disengaged in said reaction vessel, wherein a fluidized bed of catalyst is maintained in said reaction vessel, wherein catalyst from said fluidized bed is withdrawn into the upper portion of said stripping zone, wherein stripping vapors are introduced into the lower portion of said stripping zone, wherein stripping vapors and stripped hdyrocarbons are vented from the top of the stripping zone into the upper portion of said reaction vessel above the surface of the fluidized catalyst bed, and wherein stripped catalyst from the bottom of the stripping zone is withdrawn into the regeneration zone; the improvement which comprises:

a. restricting flow of stripping vapors and stripped hydrocarbon from said stripping zone to said reactor to maintain a selected differential pressure between the top of stripping zone and the upper portion of the reaction vessel;

b. accumulating a bed of fluidized catalyst in the reaction vessel sufficient to provide a weight of fluidized catalyst equivalent to the pressure differential between the top of the stripping zone and the upper portion of the reaction vessel; and

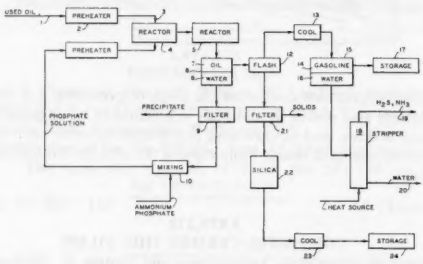
c. flowing catalyst from the bottom of said fluidized bed into upper portion of said stripping zone at a rate sufficient to maintain the volume of fluidized bed of step (b).

3,879,282

RECLAIMING USED MOTOR OIL BY CHEMICAL TREATMENT WITH AMMONIUM PHOSPHATE

Marvin M. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 26, 1974, Ser. No. 445,960
Int. Cl. C10g *27/00*
U.S. Cl. 208—184 **10 Claims**



1. A method for reducing the ash content of used motor oil said method comprising (a) contacting said used oil with an aqueous solution of an ammonium phosphate reagent at conditions of temperature and pressure sufficient to react said ammonium phosphate with metal salts present in the used motor oil, (b) allowing the precipitate formed by the reaction to settle, and (c) separating the oil from the water and solid precipitate.

7. A method for reclaiming used motor oil containing metal salts, said method comprising: (a) preheating the used motor oil to a temperature in the range of 200° to about 500°F, (b) preheating an aqueous solution of ammonium phosphate to a temperature in the range of about 200° to about 500°F, (c) contacting said preheated motor oil and said preheated aqueous solution of ammonium phosphate in at least one agitated reactor at conditions sufficient to maintain a reaction producing a precipitate, (d) allowing the reaction product to separate into an oil layer and a water layer and the precipitate to settle in the water layer (e) removing the water layer and filtering the precipitate from the water, (f) adding sufficient ammonium phosphate to the filtered water to produce an aqueous solution of ammonium phosphate having a concentration of about 2 to about 25 weight percent ammonium phosphate and recirculate through the preheater in (b), and (g) removing the oil.

3,879,283

PURIFICATION OF QUARTZ CONTAMINATED CLAY BY SELECTIVE FLOCCULATION

Venancio V. Mercade, Metuchen, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.

Continuation-in-part of Ser. No. 85,284, Oct. 29, 1970, abandoned. This application July 31, 1972, Ser. No. 276,578The portion of the term of this patent subsequent to Oct. 31, 1989, has been disclaimed.
Int. Cl. B03d *3/06*
U.S. Cl. 209—5 **7 Claims**

1. A method for purifying kaolin clay containing from 2 to 50 percent by weight of a finely divided quartz impurity which comprises dispersing said impure clay in water to form a dispersed clay slip having a pH in the range of 8.0 to 9.5, separately incorporating therein a soluble compound containing polyvalent metal cations in amount to provide a concentration of polyvalent metal cations in the range of 10 p.p.m. to 200 p.p.m. and insufficient to flocculate the slip and from ¼ to 5 p.p.m. of a water-soluble synthetic organic weakly anionic polyacrylamide flocculant, said amount of polyacrylamide flocculant being sufficient, in combination with said source of polyvalent cations, to flocculate selectively a substantial amount of the finely divided quartz impurity, agitating the slip mildly until flocs of quartz form and settle to the

bottom of the slip and separating the flocs from the slip of purified clay.

3,879,284

CONCENTRATOR

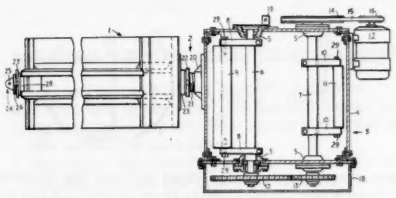
Derec Fay Vaughan Davies, Sydney, New South Wales, Australia, assignor to Deister Concentrator Company Inc., Ft. Wayne, Ind.

Filed Oct. 26, 1972, Ser. No. 300,909

Claims priority, application Australia, Oct. 28, 1971, 6828/71

Int. Cl. B03b *3/12*

U.S. Cl. 209—441 **7 Claims**



1. A concentrator comprising a separating table and a drive unit of poly eccentric flywheel type which inherently generates reciprocating motion which is quicker in one direction than in the opposite direction, an axially rigid releasable coupling between the table and the drive unit, means for releasing and locking the coupling to permit rotation and securing of the table at a desired sideways inclination, and attachment means on the drive unit and the table for suspending the concentrator on cables.

3,879,285

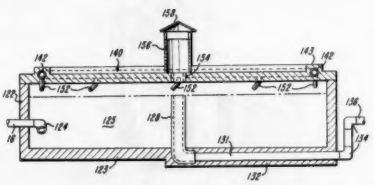
AEROBIC SEWAGE TREATMENT SYSTEM

Kenneth J. Yost, Eaton, Ohio, assignor to Coate Burial Vault, Inc., West Milton, Ohio

Continuation-in-part of Ser. No. 241,128, April 5, 1972, Pat. No. 3,817,858. This application Dec. 17, 1973, Ser. No. 424,549

Int. Cl. C02b *3/08*; **C02c** *5/10*

U.S. Cl. 210—14 **17 Claims**



1. Apparatus for aerobically digesting organic matter within sewage water, comprising a substantially cylindrical tank including bottom, top and side walls defining an enclosed substantially cylindrical treating chamber, a sewage water inlet line for directing sewage water into said chamber, a water discharge line defining an outlet within the center portion of said chamber, said outlet being positioned to limit the water within said chamber at a level below said top wall of said tank to define an air space within said chamber above the surface of the water, air conduit means for supplying a flow of air into the air space adjacent said top wall of said tank, means for directing a flow of air downwardly against the surface of the water within said chamber and in a horizontal substantially circular path adjacent the surface of the sewage water to effect circulation of the sewage in a horizontal circular path around said outlet and for centrifugally moving the heavier more polluted water radially outwardly from said outlet while diffusing air into the water, and means defining an air discharge passage extending from the air space for exhausting the air circulated within the air space.

12. A method of aerobically digesting organic matter within sewage water, comprising the steps of introducing the sewage water into a generally cylindrical enclosed tank chamber, supplying a flow of air into said chamber above the surface of the sewage water, directing the flow of air in a generally circular horizontal path adjacent the surface of the sewage water to effect circulation of the sewage in a generally circular horizontal path for centrifugally moving the heavier more polluted water radially outwardly within said chamber while diffusing air into the water, discharging the treated water from said chamber, and exhausting the air from said chamber.

3,879,286

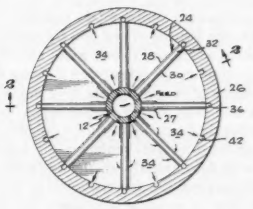
FILTERING APPARATUS AND METHOD

Lester P. Berriman, Irvine, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 885,099, Dec. 15, 1969, Pat. No. 3,669,879. This application June 12, 1972, Ser. No. 261,803The portion of the term of this patent subsequent to June 13, 1989, has been disclaimed.

Int. Cl. B01d *13/00*

U.S. Cl. 210—23 **12 Claims**



1. Apparatus for separating a carrier fluid from particles that lie in suspension in the fluid comprising:

a frame;

means for rotatably supporting said frame;

motor means coupled to said frame to rotate it;

a screen mounted on said frame, said screen having first and second faces extending with a primarily radial directional component from the axis of rotation of the frame and having a multiplicity of holes;

first conduit means for applying feed fluid containing the carrier fluid and suspended particles, to a radially inner location along said screen at a first face thereof;

second conduit means for carrying away filtrate that includes primarily the carrier fluid, that has passed through said screen; and

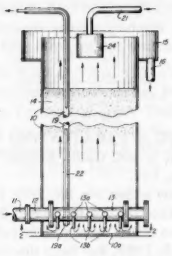
third conduit means for carrying away concentrate that includes carrier fluid with suspended particles therein that has passed to the radially outermost portion without having passed through the screen;

said frame having a surrounding wall which rotates with the rest of the frame to form a substantially closed container that can be filled with the carrier fluid and suspended particles.

3,879,287
CONTINUOUS ION EXCHANGE PROCESS AND APPARATUS

Robert R. Porter, 304 1st Security Bldg., Salt Lake City, Utah 84111

Filed Oct. 31, 1972, Ser. No. 302,589
Int. Cl. B01d 15/06; B01j 1/06
U.S. Cl. 210—33 19 Claims



1. A method of extracting ions from a liquid solution containing same, comprising continuously passing such a solution successively into the bottom of and upwardly through each ion exchange vessel of a series of two or more vessels, said vessels each initially containing an adsorption column of particulate ion exchange material of appropriate type through which said solution flows and with which it exchanges ions; removing substantially all of the loaded adsorption column from the first vessel of the series; thereafter replacing the removed adsorption column with substantially all the relatively less loaded adsorption column from the second vessel of the series, while continuing the flow of solution; and doing the same for each subsequent vessel of the series in turn, the adsorption column of the last vessel of the series being replaced by substantially unloaded ion exchange material; continuously withdrawing the treated solution from said last vessel of the series; and continually repeating the cycle during the period of operation of the method.

10. Apparatus for continuously extracting ions from a liquid solution containing same, comprising a series of ion exchange vessels, each initially containing an adsorption column of a particulate ion exchange material of appropriate type; an inlet at the bottom of the adsorption column of the first vessel of the series for the continuous introduction of solution to be treated; an outlet at the upper end of the adsorption column of the last vessel of the series for the continuous discharge of treated solution; a flow conduit for each vessel of the series, except the last, extending from the top of the adsorption column of that vessel to the bottom of the adsorption column of the next subsequent vessel of the series, so that solution flows continuously from the bottom of one adsorption column to the top of that column and then to the bottom of the next subsequent adsorption column; means in association with said first vessel of the series for removing the adsorption column thereof; means in association with each of the subsequent vessels of the series for transferring the adsorption column of that vessel to the next preceeding vessel of the series; means for replacing the adsorption column of the last vessel of the series with substantially unloaded ion exchange material; and means for sequentially operating said removing means, each of said transferring means in turn, and said replacing means.

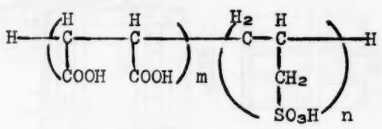
3,879,288
PROCESS OF INHIBITING SCALE FORMATION ON WALLS OF STRUCTURES CONTAINING AN AQUEOUS SYSTEM

Frederick Herman Siegele, 91 Hillspoint Rd., Westport, Conn. 06880

Continuation-in-part of Ser. No. 51,686, July 1, 1970, Pat. No. 3,706,717. This application Dec. 13, 1972, Ser. No. 314,630
Int. Cl. C02b 5/02, 5/06
U.S. Cl. 210—58 2 Claims

1. A process for the control of hard, adherent scales on the walls of vessels or pipes containing an aqueous system which comprises:

adding from 20 to 200 parts per million of a water soluble copolymer which in acid form has the structure:



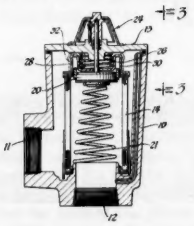
wherein *m* and *n* are in random order and such that the molecular weight is from about 1,000 to about 25,000 and *m* is from 30 to 50 mol percent and *n* is from 50 to 70 mol percent and water-soluble salts thereof.

2. The process according to claim 1 in which the water soluble salt of the copolymer is the sodium acid salt of a copolymer of allyl sulfonate fumarate having an average molecular weight of about 5,000 and with the presence of zinc ion in the aqueous system, said zinc ion derived from the addition of a water soluble zinc salt such as zinc sulfate in a weight amount of from one to three times said copolymer.

3,879,289
POWER TRANSMISSION

Ronald A. Aspinwall, Detroit, and MacKellar K. Graham, Birmingham, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed July 25, 1973, Ser. No. 382,405
Int. Cl. B01d 27/10
U.S. Cl. 210—90 1 Claim

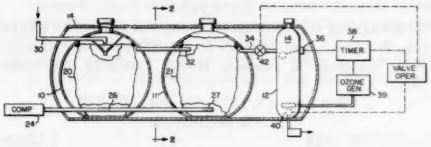


1. A filter comprising a housing member and a cover member, spaced inlet and outlet connections, a cylindrical filter cartridge interposed between the connections, a combined bypass valve and indicator mounted in one member and adjacent an end of the cartridge, means extending through the one member for converting longitudinal motion of the valve into rotary motion of the indicator, a first spring in the cartridge biasing the valve to closed position, a second spring capable of moving the valve to open position, and means abutting a part of the cartridge for holding the second spring stressed independently of the force of the first spring whereby if either the cartridge or the first spring or both are removed, the valve and the indicator will be shifted to open position by the fluid pressure drop or by the second spring respectively.

3,879,290
DOMESTIC SEWAGE SYSTEM

Nathaniel D. Arnot, Jr., 12 First Street, Westfield, N.Y. 14787

Filed May 29, 1973, Ser. No. 364,526
Int. Cl. C02c *1/02*
U.S. Cl. 210—110 5 Claims

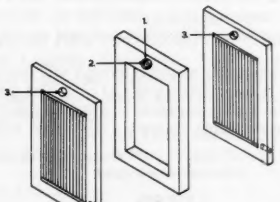


1. A sewage treatment system particularly for domestic use comprising:
   a. first and second tanks of generally similar size,
   b. a third tank smaller than said first and second tanks,
   c. means connecting said first, second, and third tanks in flow series with each other,
   d. inlet means for delivering sewage from a domestic establishment into said first tank, from which it flows into said second tank, and thence into said third tank,
   e. aeration means for continuously aerating the sewage in said first and second tanks,
   f. oxidizing means for oxidizing the contents of said third tank intensely,
   g. discharge means for emptying said third tank, and
   h. timer means for actuating said oxidizing means and said discharge means according to a predetermined sequence in response to the filling of said third tank, allowing sufficient dwell to effect substantially complete sterilization of the contents of said third tank before it is emptied.

3,879,291
FILTRATION PROCESS

Raymond Davison, Manchester, England, assignor to Imperial Chemical Industries Limited, Millbank, London, England

Filed Nov. 22, 1972, Ser. No. 308,745
Claims priority, application United Kingdom, Nov. 16, 1971, 53088/71
Int. Cl. B01d *25/12*
U.S. Cl. 210—231 2 Claims

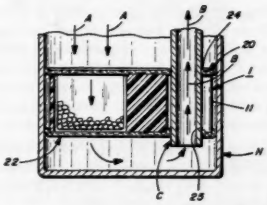


1. A frame for a plate and frame filter press comprising a metal reinforced moulded rubber framework encircling an open space and having an inlet port in said framework directly communicating with said open space and means for allowing the contents of the open space after filteration is complete to be flushed out without separating the plates and frame, said means comprising a discharge port in said framework directly communicating with said open space

3,879,292
DESICCANT DEVICE

Ralph T. McClive, Kenmore, N.Y., assignor to Clecon, Incorporated, Cleveland, Ohio

Continuation-in-part of Ser. No. 236,057, March 20, 1972, Pat. No. 3,799,352. This application Jan. 28, 1974, Ser. No. 437,332
Int. Cl. B01d *27/02*
U.S. Cl. 210—282 10 Claims



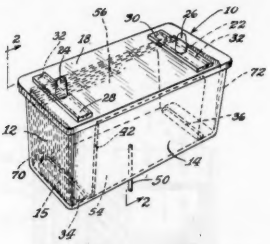
1. A cartridge-type desiccant device of selt-supporting construction containing a desiccant material adapted for replaceable installation in a refrigeration system of the type having a hollow housing for interiorly mounting said device for removing moisture from a refrigerant fluid, said desiccant device comprising,
   a hollow body member containing said desiccant material removably insertable in a bore in said housing in the path of refrigerant flow therethrough,
   said body member including axially rigid, endless exterior side wall made from a polymeric material and having upper and lower peripheral end edges,
   said side wall being of a fluid impervious, self-supporting construction having a maximum transverse dimension which is less than the corresponding minimum transverse dimension of the bore in said housing,
   said body including upper and lower flexible, filter members each made from a fluid pervious, polymeric fibrous material,
   the polymeric material of said body and filter members being heat fused onto the confronting surfaces of the associated upper and lower end edges of said body member,
   said body and filter members together defining a closed receptacle for containing said desiccant material and with said filter members conjointly acting with said desiccant material to mechanically filter solid particles and moisture from said refrigerant flow,
   said side wall having a recessed, key-way like slot extending axially between the end edges of said body member,
   said slot being made from and defined by the extended surface of said wall so as to be disposed completely exteriorly of the closed receptacle provided by said side wall, said slot being open at both ends and opening outwardly in a direction away from the longitudinal central axis of said body so as to receive a conduit exteriorly of said body which openly connects at one end with said bore to enable maximum filtration and moisture removal through said desiccant material and filter members while removing desiccated refrigerant flow from said bore through said conduit exteriorly of the body of said device.

3,879,293

MEMBRANE DIFFUSION DEVICE HAVING INFLATABLE MEMBER FOR PRESSURIZATION AND SEALING

Ludwig Wolf, Jr., Barrington, and Robert G. Seaverns, Wheeling, both of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed June 20, 1974, Ser. No. 481,081
Int. Cl. B01d 31/00
U.S. Cl. 210—321 7 Claims



1. In a membrane diffusion device which comprises a stack of flat membrane wall pairs and flat membrane supports in alternating, interleaving relation, said stack being disposed in a casing, the improvement comprising:

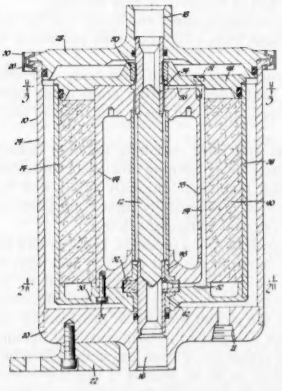
an integral inflatable member disposed between opposite major faces of stack and the interior walls of said casing, and also disposed between a side face of the stack, which is disposed between said major faces, and the interior wall of said casing, and a flow conduit communicating with the exterior, and also communicating with said inflatable member, to permit pressurization of said opposite major faces of the stack while simultaneously providing sealing for said major faces and said side face.

3,879,294

FLUID OPERATED CONTAMINANT TRAP

Gaylor O. Ellis, Rochester; John A. Halat, Troy, and Girish B. Sawhney, Madison Heights, all of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed May 4, 1972, Ser. No. 250,223
Int. Cl. B01d 33/02, 35/26
U.S. Cl. 210—354 8 Claims



1. A dynamic filter comprising a cylindrical casing having two terminal passages forming an inlet at one end and an outlet at the other end, a cylindrical rotor journalled in the casing and having rotational connection with the inlet and the outlet, means forming a centrifugal pump adjacent one terminal and means forming a turbine adjacent the other terminal, axial flow passages in the rotor connecting the pump and the turbine, and a contaminant particle trap forming the radially outer walls of the axial flow passages, the rotor being driven solely by the fluid passing through the filter.

3,879,295

VACUTAINER WITH POSITIVE SEPARATION BARRIER

Clyde P. Glover, and Michael P. O'Neill, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 17, 1973, Ser. No. 389,275
Int. Cl. B01d 21/26
U.S. Cl. 210—516 7 Claims

1. Apparatus for separating with a physical barrier one phase from the remainder of a liquid having at least two phases, comprising:

a. a tubular unitary receptacle open at one end and closed at the opposite said one end, for containing such liquid, said receptacle having an internal constriction defining an aperture which divides said receptacle into a first chamber for containing such one phase only and a second chamber for containing the remainder of such liquid,

said aperture having a cross-sectional dimension smaller than the smallest internal cross-sectional dimension of said first chamber;

b. a resilient plug for sealingly engaging said constriction to form a physical barrier between said first chamber and said second chamber,

said plug being symmetrical about a centerline and smaller in cross-section at its widest diameter than the largest internal cross-sectional dimension of said first chamber, and having a first portion, a neck portion, and a second portion for engaging said constriction at, respectively, said first chamber, said aperture, and said second chamber; and

c. rod means detachably mounted through said first portion of said plug in coincidence with said centerline for urging said plug into sealing engagement with said constriction, said rod means being thereafter removable from said plug.

3,879,296

DECANTER

August Johannes Schneider, Mallorca, Spain, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Sept. 7, 1973, Ser. No. 395,231
Claims priority, application Switzerland, Sept. 12, 1972, 013323/72
Int. Cl. B04c 5/26
U.S. Cl. 210—512 R 9 Claims

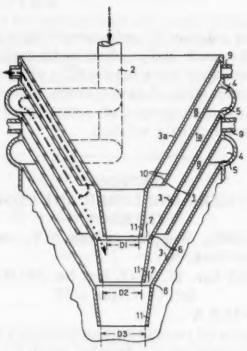
1. A decanter for clarifying a sludge comprising

a. a group of vertically spaced, sloping plates which define a plurality of superposed separating chambers,

b. each chamber having a top plate, a bottom plate on which sediment settles and slides downward, a sludge inlet opening at the upper margin of said bottom plate which leads sludge onto the upper surface of that plate, and a discharge opening for sediment at the lower margin of the bottom plate,

c. the size of each chamber being so correlated with the character and throughput rate of the sludge that the chamber has a sludge zone in its upper portion, a sediment zone at its lower portion, and a clear liquid zone which overlies the sediment zone;

d. supply passage means for feeding sludge to be decanted in parallel to the inlet openings of the chambers; and



e. an inclined duct for each chamber which is spaced vertically from the bottom plate and leads upward along said sludge zone from a lower region of the chamber which is at the top of said clear liquid zone to a clear liquid outlet adjacent the upper margin of the top plate, the duct providing a clear liquid discharge path which is isolated from the sludge in the chamber,

f. each duct having an entrance at its lower end which faces downward in the direction of sludge flow along the bottom plate so that the duct receives ascending clarified liquid and that entry into the duct of descending sediment is precluded.

3,879,297

LIQUID FIRE EXTINGUISHING COMPOSITION

Philippe Languille, Courbevoie; Jean-Claude Vitat; Antony Roland Guillemont, both of Bourg-la-Reine, and Jean-Pierre Remond, Massy-Villaine, all of France, assignors to Rhone-Progil, Paris, France

Filed Oct. 10, 1972, Ser. No. 295,979
Claims priority, application France, Oct. 8, 1971, 71.36238
Int. Cl. A62d *1/00*
U.S. Cl. 252—8 **8 Claims**

1. A liquid fire extinguishing composition consisting essentially of from 50% to 99.5% by weight of at least one fire extinguishing halogenated aliphatic hydrocarbon selected from the group consisting of fluorohalogenated C1–C5 aliphatic hydrocarbon, ethyl bromide, chlorobromomethane and bromoform, from 0.5% to 20% by weight of at least one polysiloxane, 0 to 49.9% by weight of a polysiloxane solvent, and 0 to 49.9% by weight of a pressurizing agent, and in which the amount of polysiloxane solvent and/or pressurizing agent does not exceed 4% by weight of the fire extinguishing composition when the polysiloxane solvent and pressurizing agent are inflammable.

3,879,298

CONTROLLING SALT CONTAMINATED DRILLING FLUIDS WITH ETHYLENE DICARBOXYLIC ACID

Thad O. Walker, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,032
Int. Cl. E21b *21/04*
U.S. Cl. 252—8.5 C **10 Claims**

1. Method of controlling the rheology of a fresh water drilling fluid that has been contaminated with a salt selected from the group consisting of sodium chloride, potassium chloride and mixtures thereof, by adding to said salt contaminated drilling fluid a ethylenedicarboxylic acid selected from the group consisting of maleic acid, fumaric acid and maleic acid anhydride, in an amount of from about 0.5 to about 6 pounds per barrel of drilling fluid.

6. In a method of drilling wells where in the drilling fluid is passed through the well in contact with an earth formation during the drilling operation in contact with a salt selected from the group consisting of sodium chloride, potassium chloride and mixtures thereof in the formation, the improvement which comprises contacting said earth formation with a fresh water drilling fluid containing clay solids dispersed therein by a clay dispersing agent and containing from about 0.5 to about 6 pounds per barrel of drilling fluid of an ethylenedicarboxylic acid, said ethylenedicarboxylic acid being effective to restore the rheology of said drilling fluid in the presence of any contaminating amounts of salt in the formation, said ethylenedicarboxylic acid being selected from the group consisting of maleic acid, fumaric acid and maleic acid anhydride.

10. A drilling fluid additive to restore the mud properties of a fresh water drilling fluid that has been contaminated with a salt selected from the group consisting of sodium chloride, potassium chloride and mixtures thereof, which consists of a member selected from the group consisting of maleic acid, maleic anhydride, fumaric acid, and a mixture of maleic acid and maleic anhydride.

3,879,299

CONTROLLING SALT CONTAMINATED DRILLING FLUIDS BY THE ADDITION OF AN ADMIXTURE OF A WATER SOLUBLE CHROMATE AND ETHYLENE DICARBOXYLIC ACID

Thad O. Walker, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,033
Int. Cl. E21b *21/04*
U.S. Cl. 252—8.5 B **19 Claims**

1. Method of controlling the rheology of a fresh water drilling fluid that has been contaminated with a salt selected from the group consisting of sodium chloride and potassium chloride and mixture thereof, by adding to said salt contaminated drilling mud in an amount of from about 0.5 to about 10 pounds per barrel, an admixture of a water soluble chromate and an ethylene dicarboxylic acid or an anhydride thereof, selected from the group consisting of maleic acid, fumaric acid and maleic acid anhydride, and mixtures thereof.

12. In a method of drilling wells wherein a fresh water drilling fluid is passed through the well in contact with an earth formation during the drilling operation in contact with a salt selected from the group consisting of sodium chloride and potassium chloride and mixture thereof in the formation, the improvement which comprises contacting said earth formation with a fresh water drilling fluid containing clay solids dispersed therein by a clay dispersing agent, said drilling fluid containing from about 0.5 to about 10 pounds per barrel of drilling fluid of an admixture of sodium chromate and an ethylene dicarboxylic acid or an anhydride thereof, selected from the group consisting of maleic acid, fumaric acid and maleic acid anhydride and mixtures thereof, said admixture being effective to restore the rheology of said drilling fluid in the presence of any contaminating amounts of salt in the formation.

17. A drilling fluid additive to restore the mud properties of a fresh water drilling fluid that has been contaminated with a salt selected from the group consisting of sodium chloride and potassium chloride and mixture thereof, which comprises an admixture of a water soluble chromate in an amount of from 0.2 to 1 part by weight and from about 1 to about 5 parts by weight of a member selected from the group consisting of maleic acid, maleic acid anhydride, fumaric acid and a mixture of maleic acid and maleic anhydride.

3,879,300

DIAMINE CONTAINING SOFTENER COMPOSITIONS

Adolph Renold, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 25, 1972, Ser. No. 300,580
Int. Cl. D06m 1/14
U.S. Cl. 252—8.8 4 Claims

1. A fabric softening composition comprising

1. N-higher alkyl-1,3-propylene diamine said higher alkyl group having from 12–22 carbon atoms and having been treated by contacting same with a monomer selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof, polymerizing the monomer and neutralizing the polymerized monomer,
2. an additive, said additive selected from the group consisting of urea, sugar, and mixtures thereof.

3,879,301

LOW FRICTION BEARING MATERIAL AND METHOD

James W. Cairns, Cherry Hill, N.J., assignor to Garlock Inc., Rochester, N.Y.

Filed July 12, 1973, Ser. No. 378,792
Int. Cl. C10m 7/40; C01m 7/16; C10m 7/06
U.S. Cl. 252—12 20 Claims

1. A low friction bearing composition comprising a major portion of a thermoplastic resin other than polytetrafluoroethylene and a minor portion of a filled polytetrafluoroethylene material, said filled polytetrafluoroethylene material consisting essentially of at least 50 percent by volume of polytetrafluoroethylene polymer and the remainder being a filler material, said filler material being selected from the group consisting of carbon, glass, asbestos, silica, zinc, cadmium, lead and the oxides thereof, bronze, molybdenum disulfide, tungsten disulfide, alumina, zirconia, titanium oxide, cupric oxide, boron nitride, kieselguhr and mixtures thereof.

3,879,302

FLUOROCARBON-BASED SEALING COMPOUND

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest

Continuation-in-part of Ser. No. 377,931, July 10, 1973. This application Oct. 24, 1973, Ser. No. 411,304
Int. Cl. C10m 1/10
U.S. Cl. 252—25 12 Claims

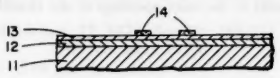
1. A sealing compound for threaded pipe joints and the like, the compound being initially flowable but being converted into a putty-like mass having packing and lubricating properties when subjected to shear forces, said compound comprising inert mineral filler particles in an amount sufficient to provide virtually no cold flow of said compound and a freeze-thaw stabilized aqueous dispersion of a major amount of tetrafluoroethylene powders enveloped by a stabilizing agent constituted by a silicon compound selected from the group consisting of silanes and silizanes in an amount not in excess of about 10 percent by volume relative to the dispersion to impart freeze-thaw characteristics thereto that prevent clumping of the powders, said filler particles being intermingled with said dispersion whereby when the compound is subjected to shear forces that cause the filler particles to scrub off the agent from the powders, the powders then clump and bind the filler particles to form said putty-like mass.

3,879,303

ETCHANT FOR GOLD

Ronald R. Bowman, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 254,759, May 18, 1972, Pat. No. 3,819,433, which is a division of Ser. No. 55,579, July 16, 1970, Pat. No. 3,709,695, which is a division of Ser. No. 528,540, Feb. 18, 1966, abandoned. This application Nov. 2, 1973, Ser. No. 412,058
Int. Cl. C09k 3/00; C23f 1/02
U.S. Cl. 252—79.1 2 Claims



1. An etching solution for gold comprising a proportion of an alkali metal cyanide and an alkali metal carbonate, and an organic acid derivative being substantially of the same proportion as the combination of said cyanide and said carbonate and being dissolved in water and comprising 5% to 20% by weight of the total etchant solution.

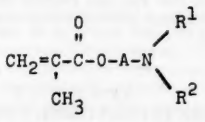
3,879,304

GRAFT POLYMERS AND LUBRICANT COMPOSITIONS THEREOF

James O. Waldbillig, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 18, 1973, Ser. No. 351,914
Int. Cl. C10m 1/32
U.S. Cl. 252—51.5 A 5 Claims

1. A lubricating oil composition comprising a major amount of mineral lubricating oil and between about 0.1 and 50 wt. % of a graft polymer consisting of a linear terpolymer backbone component of between about 15 and 75 wt. % ethylene, between about 25 and 85 wt. % terminally unsaturated alkene of 3 to 10 carbons and between about 0.10 and 15 wt. % terminally unsaturated non conjugated alkadiene of from 5 to 8 carbons having grafts thereon of a polymethacrylate composed of monomer selected from the group consisting of (1). a mixture of a first alkyl methacrylate of 14 to 19 carbons and a second alkyl methacrylate of 20 to 24 carbons in a respective weight ratio of between about 10:1 and 1:10, (2). dialkylaminoalkyl methacrylate chracterized by the formula:



where R^1 and R^2 are alkyl of from 1 to 2 carbons and A is alkadiyl of from 1 to 5 carbons, and (3). a mixture of (1) and (2), said backbone component to said graft component being present in a weight ratio in said graft polymer of between about 1,000:1 and 1:10, said linear terpolymer backbone component having a carbon chain length of between about 700 and 7,000 carbons.

3,879,305

GREASE THICKENED WITH OXYGEN-LINKED OR SULFUR-LINKED POLYUREAS

Melville Ehrlich, Hopewell Township, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,688
Int. Cl. C10m 5/22, 5/20, 7/36
U.S. Cl. 252—47.5 11 Claims

1. A grease composition comprising an oil of lubricating viscosity, as a vehicle, and a thickening amount of a polyurea,

said polyurea having been prepared by reacting stoichiometrically at a temperature of from about 45° to about 250°F a monoamine, a diisocyanate and a diamine having one amino group attached to each of two hydrocarbyl groups and said hydrocarbyl groups being separated by an oxygen or sulfur atom.

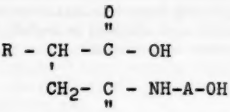
3,879,306

AUTOMATIC TRANSMISSION FLUID

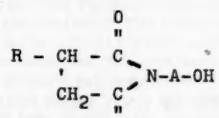
Mahmoud S. Kablaoui; Robert E. Reid, both of Wappingers Falls, and Arthur W. Godfrey, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,101
Int. Cl. C10m *1/36, 1/32*
U.S. Cl. 252—51.5 A **3 Claims**

1. A method for operating an automatic transmission which comprises supplying to said transmission a lubricating oil composition comprising at least about 85 wt. % of a mineral lubricating oil and between about 0.01 and 5 wt. % of a friction modifier selected from the group consisting of N-(hydroxyalkyl) alkenyl succinamic acid characterized by the formula:



and a mixture of said succinamic acid and N-(hydroxyalkyl) alkenyl succinimide characterized by the formula:



where R is alkenyl of from 10 to 30 carbons and A is a divalent aliphatic hydrocarbon radical of from 1 to 6 carbons, said succinamic to succinimide weight ratio is said mixture of between about 1:0.01 and 1:1.

3,879,307

ORGANIC COMPOSITIONS CONTAINING SYNERGISTIC ANTIOXIDANT MIXTURES

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 361,725, May 18, 1973, Pat. No. 3,825,496. This application Apr. 3, 1974, Ser. No. 457,338
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 R **20 Claims**

1. An organic composition comprising a major amount of a base fluid selected from the group consisting of normally liquid hydrocarbon fuels, oils of lubricating viscosity and greases of oils of lubricating viscosity, and in an amount sufficient to increase oxidation resistance, a synergistic mixture of (a) 1-n-butoxy - 1 (-1-napthoxy) ethane and (b) a co-antioxidant selected from the group consisting of dioctylphenylamine, n-t1octylphenyl-1-napthylamine, 4-(-2-ethylhexoxy) diphenylamine and 4-n-octoxydiphenylamine, wherein the mol ratio of (a) to (b) is from about 1:10 to about 10:1.

3,879,308

LUBRICANTS AND FUELS CONTAINING ESTER-CONTAINING COMPOSITIONS

Clark Ober Miller, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 360,207, May 14, 1973, which is a continuation of Ser. No. 152,424, June 11, 1971, abandoned, which is a division of Ser. No. 12,838, Feb. 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 823,990, May 12, 1969, abandoned. This application June 12, 1973, Ser. No. 369,370
Int. Cl. C10m *1/26*
U.S. Cl. 252—56 R **16 Claims**

1. A lubricant or fuel composition comprising a major amount of lubricating oil or a normally liquid fuel and a minor amount of at least one detergent ester additive sufficient to improve the demulsification properties of the composition, said additive comprising the oil soluble reaction product prepared by the esterification reaction of

A. at least one substantially saturated aliphatic hydrocarbon carboxylic acid acylating agent having an average of at least thirty aliphatic carbon atoms per molecule exclusive of the carboxylic carbon atom and being substantially free from oil-solubilizing pendant groups; with

B. at least one polyoxyalkylene alcohol, which is a demulsifier for aqueous emulsions, has an average molecular weight in the range of from about 1,000 to about 10,000, and is a block polymer comprising (1) a hydrophobic portion corresponding to the formula, —CH(R')—CH_2—O—, wherein R' is an alkyl group of up to three carbon atoms, and (2) from about 5% to about 40% by weight of a hydrophilic portion corresponding to the formula, —CH_2—CH_2—O—; and

C. at least one polyhydric alcohol having two to ten hydroxy groups and up to twenty aliphatic carbon atoms; wherin the total amount of (A), (B), and (C) used in the reaction is such that there is at least 0.001 equivalent of (B), and at least 0.01 equivalent of (C) per equivalent of (A).

3,879,309

DETERGENT BAR MADE FROM MIXED FATTY ACID DERIVATIVES

Louis Gatti, 1415 Graymill Dr., Scotch Plains, N.J. 07090, and Raymond George Matthaei, 35-03 Van Duren Ave., Fair Lawn, N.J. 07410

Filed Jan. 17, 1973, Ser. No. 324,459
Int. Cl. C11d *13/00*
U.S. Cl. 252—117 **4 Claims**

1. A mixture of fatty acids comprising about 28 to about 37% decanoic acid, about 18 to about 24% dodecanoic acid, about 16 to about 21% tetradecanoic acid, about 9 to about 20% hexadecanoic acid, and about 10 to about 17% octadecanoic acid, said percentages being on the total fatty acid basis, and said mixture being adaptable for use in the preparation of an acyl isethionate mixture having superior lathering properties.

3,879,310

SURFACE STABILIZED ACTIVE ALUMINA

Ronald J. Rigge, Pleasanton; Orrie C. Olsen, and Charles T. Goetschel, both of Walnut Creek, all of N.J., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Mar. 26, 1973, Ser. No. 344,630
Int. Cl. B01j *11/82;* **C01f** *7/02*
U.S. Cl. 252—435 **11 Claims**

1. A pseudoboehmitic alumina of high thermal stability, having selective isomerization properties, characterized by a uniformly distributed PO_4-content from about 1% to about 20% by weight calculated on the weight of the alumina when heated to 1000°C for 1 hour, a pseudoboehmite content of at least about 30% by weight as determined by X-ray diffraction using copper Kα radiation, wherein the diffraction peak of greatest intensity (I/I_o) is in the range of 6.5–6.8 A, a surface

area of at least about 300 m^2/g after heating the composite to 600°C for 2 hours.

3,879,311

CATALYST REGENERATION

Stuart Schott, Cincinnati; David W. Lum, Reading, and Irving L. Mador, Cincinnati, all of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,821

Int. Cl. B01j *11/18*

U.S. Cl. 252—415 **5 Claims**

1. A process for the regeneration of a metal catalyst used in a vapor phase process for the production of vinyl acetate from ethylene, oxygen and acetic acid, said catalyst comprising a combination of a palladium, gold and an alumina support, which comprises the following sequential steps:

a. washing and saturating the metal catalyst to be regenerated with an aqueous hydrochloric acid solution containing about 1 to 4% by weight of hydrochloric acid and from about 0.05 to 0.5% by weight of an oxygen scavenger selected from the group consisting of hydrazine and methylhydrazine to remove loose metal, support fines, and soluble salts of undesirable metal contaminants from the metal catalyst;

b. partially drying the washed metal catalyst to lower the amount of water in the catalyst to a range of from about 65 to 95% of saturation;

c. contacting the partially dried metal catalyst with gaseous chlorine to obtain a chlorinated metal catalyst;

d. passing moist air over the chlorinated metal catalyst to remove substantially all excess chlorine from the chlorinated metal catalyst;

e. contacting the chlorinated metal catalyst with an aqueous alkaline reducing solution comprising about 1 to 10 parts by weight formaldehyde, about 5 to 20 parts by weight of methanol and about 5 to 20 parts by weight of an alkali metal hydroxide selected from the group consisting of sodium hydroxide, potassium hydroxide and mixtures thereof to reduce the chlorinated metal catalyst to a metal catalyst;

f. washing the resulting reduced metal catalyst with an aqueous solution containing from about 0.05 to 0.5% by weight of an alkali metal compound selected from the group consisting of potassium acetate, sodium acetate, sodium phosphate, sodium carbonate and mixtures thereof to remove residual reducing solution and soluble chloride components; and

g. drying the washed, reduced metal catalyst.

3,879,312

PROCESS AND CATALYST

Anne C. Udding, and Marie M. Schlesser, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

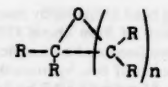
Filed Jan. 7, 1974, Ser. No. 431,191

Claims priority, application Netherlands, Jan. 2, 1973, 7300007

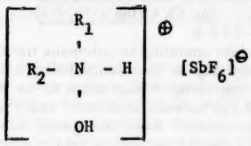
Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A **3 Claims**

1. In the process of acid-catalyzed polymerization of organic cyclic ethers using represented by the formula



where *n* is an integer from 1 to 5 inclusive, R individually is a hydrogen, alkyl, haloalkyl, alkoxy, aryl, or haloaryl, the total number of carbon atoms being from 2 to 20, inclusive, and at least one R attached to the carbon atom attached to the oxygen of the cyclic ether ring is a hydrogen catalytic amounts of salts of hexafluoroantimonic acid as catalyst and optionally organic polyols as initiators, the improvement which comprises using as the catalyst a hydroxylamonium hexafluoroantimonate having the formula;



where R_1 is a hydrogen atom or an alkyl, aryl, alkylaryl or arylalkyl group having from 1 to 20 carbon atoms inclusive and R_2 is an alkyl, aryl, alkylaryl or arylalkyl group having from 1 to 20 carbon atoms inclusive.

3,879,313

STABILIZATION OF VINYL RESIN FOAM SYSTEMS

Elwood E. Huntzinger, 616 Vernon Rd., Springfield, Pa. 19064, and Nelson N. Schwartz, 224 Lindbergh Ave., Broomall, Pa. 19008

Continuation-in-part of Ser. No. 149,325, June 2, 1971, Pat. No. 3,824,204. This application Aug. 8, 1973, Ser. No. 386,613

Int. Cl. C08f *47/10*

U.S. Cl. 260—2.5 P **6 Claims**

1. In the process of foaming a vinyl chloride resin plastisol containing a chemically heat decomposable blowing agent the improvement which comprises adding to said plastisol composition a cell stabilizer liquid, on the basis of contained dissolved solids, in an amount in the range of 0.05 to 2.0 parts by weight per 100 parts by weight of fusible vinyl chloride resin, said stabilizer consisting of the total product of the reaction, at polymerization conditions, of a precursor composition of at least one monomeric methacrylate ester of methacrylic acid with a C_3 to C_5 alcohol; a chain transfer agent selected from the group consisting of dibutyl maleate and dibutyl fumarate; an initiator; and solvent, said solvent being present in an amount at least sufficient for solvation of precursors and product to an amount equal to and no greater than 2 times the weight of monomeric methacrylate ester, and said solvent being non-reactive in the precursor composition, in the absence of said initiator, wherein said precursor composition consists of 0.1 to 20 parts by weight of chain transfer agent and 0.05 to 2.0 parts by weight of initiator per 100 parts by weight of the monomer methacrylate ester, and wherein the separable polymeric material produced from said total product of reaction has an intrinsic viscosity, measured at 30°C. in $CHCl_3$, in the range of 0.05 to 0.35 deciliters per gram.

3,879,314
PROCESS OF MAKING POROUS POLYESTER GRANULES

Raymond Harry Gunning, Box Hill North; Bruce Collins Henshaw, Mount Waverley, and Frederick John Lubbock, Beaumaris, all of Australia, assignors to Dulux Australia Ltd., Melbourne, Victoria, Australia

Filed Oct. 25, 1973, Ser. No. 409,454

Claims priority, application Australia, Nov. 13, 1972, 1202/72

Int. Cl. C08g *53/08*

U.S. Cl. 260—2.5 N **10 Claims**

1. A process of preparing an aqueous slurry of vesiculated cross-linked polyester resin granules which are dimensionally stable in that the shrinkage of a water wet granule on drying out and measuring by microscope examination shall be less than 5%, wherein:

1. droplets of water are dispersed in a solution of a carboxylated unsaturated polyester resin which has an acid value of 10–45 mgm KOH per gm in ethylenically unsaturated monomer copolymerisable therewith and which has a solubility in water at 20°C of less than 5% by weight and in the presence of a water-soluble polyamine which contains at least three amine groups per molecule and which has a dissociation constant in water (pKa value) of 8.5–10.5, at a concentration such that there are 0.3 to 1.4 amine groups present per polyester resin carboxyl group,
2. the unsaturated polyester resin solution containing disperse particles of water is stably dispersed as globules in water in the presence of a dispersion stabiliser for the disperse globules, and
3. addition polymerisation is then initiated within the globules which are thereby converted to granules of cross-linked vesiculated polyester resin.

3,879,315
PROCESS FOR THE PREPARATION OF FLEXIBLE POLYURETHANE FOAMS IN THE PRESENCE OF ALKYL ALKANOATE BLOWING AGENTS

John Watkinson, Shrub Oak, N.Y., and Ralph R. Elrich, Stamford, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 18, 1973, Ser. No. 370,850

Int. Cl. C08g *22/44, 53/10*

U.S. Cl. 260—2.5 AF **10 Claims**

1. A process for producing flexible polyurethane foams which comprises reacting and foaming, at atmospheric pressure, a reaction mixture comprising:

a. a polyether or polyester polyol component having a hydroxyl number from 28 to 150,
b. an organic polyisocyanate component,
c. a catalyst component for the reaction of (a) and (b) to form the polyurethane,
d. a polyurethane foam stabilizer component, and
e. a blowing agent component containing an alkyl alkanoate having a molecular weight no greater than 74, said alkyl alkanoate being selected from the group consisting of methyl formate, ethyl formate and methyl acetate.

3,879,316
POLYURETHANE FOAMS

John Fishbein; Raymond W. H. Bell, and Anthony J. Clarke, all of c/o Fort Dunlop, Erdington, Birmingham 24, England

Continuation-in-part of Ser. No. 417,193, Nov. 19, 1973, abandoned, which is a continuation of Ser. No. 4,057, Jan. 19, 1970, abandoned. This application Aug. 8, 1974, Ser. No. 495,780

Claims priority, application United Kingdom, Jan. 31, 1969, 5455/69; Aug. 7, 1969, 39514/69

Int. Cl. C08g *22/14, 22/22, 22/44*

U.S. Cl. 260—2.5 AW **7 Claims**

1. A flexible polyurethane foam having an improved flame resistance prepared by the process which comprises reacting in a reaction mixture containing a blowing agent (a) an organic polyisocyanate composition comprising a trimer of tolylene diisocyanate distributed in tolylene diisocyanate, the trimer constituting 10-40 percent by weight of the polyisocyanate composition, with (b) a poly(oxyethylene) poly(oxypropylene) polyol containing primary hydroxyl groups in an amount sufficient to render the foam self-extinguishing under A.S.T.M.D. 1692.

3,879,317
POLYMER SOLS INCLUDING NUCLEOPROTEIN AND CARBOXYVINYL POLYMER

Mao H. Yueh, Minneapolis, Minn., assignor to General Mills Chemicals, Inc.

Filed Jan. 10, 1974, Ser. No. 433,022

Int. Cl. C08h *7/00*

U.S. Cl. 260—8 **11 Claims**

1. A process for preparing a sol comprising adding deoxyribonucleoprotein and carboxyvinyl polymer in water, said water being present in an amount of at least 80 percent by weight of the sol, said deoxyribonucleoprotein being present in an amount of at least 0.01 percent by weight of the sol, said carboxyvinyl polymer being a member of the group consisting of homopolymers and copolymers of acrylic acid, said carboxyvinyl polymer having a molecular weight of at least about 250,000, said carboxyvinyl polymer being present in a water soluble form having a pH of at least 5.5, said carboxyvinyl polymer being present in an amount of at least 0.01 percent by weight of the sol, said polymer amount being sufficient to form a stable mixture of said water, deoxyribonucleoprotein, and carboxyvinyl polymer.

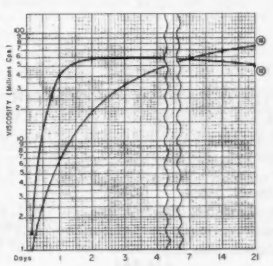
3,879,318
ORGANIC AMIDE CONTAINING COMPOSITIONS AND PROCESS FOR THICKENING CONTROL OF POLYESTERS

George E. Forsyth, Trevose, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed June 2, 1972, Ser. No. 259,055

Int. Cl. C08g *39/10*

U.S. Cl. 260—16 **16 Claims**



1. An unsaturated polyester resin composition which rapidly achieves a desired viscosity upon addition of catalyst and an alkaline earth oxide or hydroxide thickening agent and maintains said desired viscosity over extended periods of time comprising:

A. an unsaturated polyester which is a condensate of at least one α,β-ethylenically unsaturated dicarboxylic acid and at least one dihydric alcohol with the proviso that up to 75 mol percent of said unsaturated dicarboxylic acid can be replaced by saturated dicarboxylic acid;
B. an α,β-ethylenically unsaturated monomer; and
C. a thickening controller selected from the group consisting of fatty acid amides having from 1 to 20 carbon atoms.

3,879,319

SILICONE RESIN MOLDING COMPOSITIONS

Yasuhiko Sato, and Yasuaki Hara, both of Annaka, Japan, assignors to Shinetsu Chemical Company

Filed Feb. 2, 1973, Ser. No. 329,058
Claims priority, application Japan, Feb. 4, 1972, 47-12638
Int. Cl. C08g *51/72*
U.S. Cl. 260—18 S **7 Claims**

1. A silicone resin molding composition comprising essentially (a) an ester-modified organopolysiloxane resin which is produced by modifying an organopolysiloxane resin containing substituted or unsubstituted silicon-bonded organic monovalent hydrocarbon groups, the ratio of the organic groups to silicon atoms being from 1:1 to 1.6:1, and hydroxy groups bonded to silicon atoms in an amount larger than 0.25% by weight, with at least one ester having molecular weight exceeding 300 and produced by the condensation reaction of an aliphatic alcohol and an organocarboxylic acid, said ester-modified organopolysiloxane resin being produced by heating the mixture of 100 parts by weight of said organopolysiloxane resin and from 3 to 30 parts by weight of said ester at an elevated temperature, (b) an inorganic filler selected from the group consisting of glass powder, asbestos, wollastonite, diatomaceous earth, euartz powder, clay, fumed silica, precipitated silica, zirconium silicate, magnesium silicate, lithium silicate, and aluminum silicate, and (c) a curing catalyst wherein said curing catalyst is selected from the group consisting of inorganic and organic salt of lead, cobalt and manganese and mixtures thereof with polyols, organic carboxylic acids, ammonium carboxylates or carboxylic acid anhydrides.

3,879,320

POLYMERIC COMPOSITIONS

John Mathai, and Jose J. Chettiath, both of Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Oct. 10, 1973, Ser. No. 404,961
Int. Cl. C08g *45/08*
U.S. Cl. 260—23 EP **13 Claims**

1. A polymeric composition prepared by coreacting at temperatures of at least about 50°C and in the presence of an effective amount of organic peroxide approximately 50 to 95% by weight of at least one aliphatic vinyl ester and 5 to 50% by weight of at least one epoxidized fatty oil or epoxidized fatty-acid ester having at least one epoxide group per molecule.

3,879,321

ETHYLENE-VINYL ACETATE AND HIGH CIS-POLYBUTADIENE MODIFIED POLYMERS PREPARED WITH DELAYED MERCAPTAN ADDITION

James E. Shannon, Fitchburg, and Richard C. Westphal, Leominster, both of Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.

Continuation of Ser. No. 202,592, Nov. 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 70,891, Sept. 9, 1970, abandoned. This application Nov. 16, 1973, Ser. No. 416,555
Int. Cl. C08d *9/08*; **C08f** *19/08*; **C08h** *9/08*
U.S. Cl. 260—23.7 R **8 Claims**

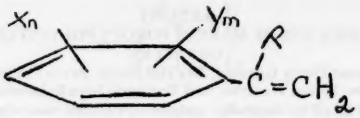
1. A moldable polymeric composition consisting essentially of:

a. plasticizer,

b. about 0.5 to 10 parts of ethylene-vinyl acetate copolymer containing about 27 to 50% by weight vinyl acetate and,

c. about 99.5 to 90 parts of polybutadiene modified alkenyl aromatic polymeric composition which has been prepared by

i. mass polymerizing an alkenyl aromatic monomer in the presence of polybutadiene having a cis-1,4 content of at least about 90% until about 2 to 15% by weight of the monomer is converted to polymer, said alkenyl aromatic monomer having the formula:



wherein X is a C_1–C_4 alkyl; Y is halogen; n and m are integers of from 0 to 2 and R is hydrogen or methyl,

ii. adding about 0.005 to 0.5%, based on the combined weight of monomer and polybutadiene, of a mercaptan molecular weight regulating agent which is an alkyl mercaptan of about 1–24 carbon atoms, and

iii. continuing the mass polymerization until about 20 to 50% of the monomer has been converted to polymer, and thereafter continuing the polymerization by mass or suspension procedures.

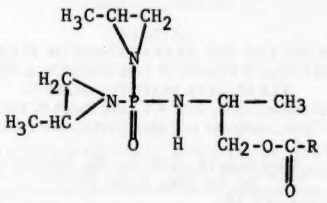
3,879,322

FUEL BINDER FOR COMPOSITE PROPELLANT

Daizo Fukuma; Seiji Takeuchi, both of Tokorozawa, and Kensho Shirota, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 6, 1973, Ser. No. 422,181
Claims priority, application Japan, Dec. 25, 1972, 48-729
Int. Cl. C08c *11/72*
U.S. Cl. 260—23.7 R **3 Claims**

1. In a fuel binder for composite propellants, having a carboxyl-terminated polybutadiene and tris 1-(2-methyl) aziridinyl phosphine oxide, the improvement comprising at least a portion of said tris 1-(2-methyl) aziridinyl phosphine oxide being a bifunctional derivative thereof having the formula:



where R represents the hydrocarbon chain of a monocarboxylic acid, said portion having been formed by the addition of the chain of the monocarboxylic acid to one of the aziridine rings of said tris 1-(2-methyl) aziridinyl phosphine oxide.

3,879,323

PROCESS FOR PREPARING A MIXTURE OF BITUMEN, A HIGH-BOILING HYDROCARBON AND A RUBBER-LIKE COPOLYMER OF ETHYLENE, AT LEAST ONE OTHER ALPHA-ALKENE AND, IF NECESSARY, ONE OR MORE POLYENES

Jozef L. M. Van Der Loos, Sittard, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Sept. 18, 1973, Ser. No. 398,438
Claims priority, application Netherlands, Sept. 22, 1972, 7212825; Apr. 26, 1973, 7305810
Int. Cl. C08c *11/70*
U.S. Cl. 260—28.5 AS **14 Claims**

1. Process for preparing a mixture of bitumen, selected from the group consisting of distillate-bitumen, blown bitumen, high-vacuum bitumen and mixed bitumen, a high-boiling hydrocarbon having a flash point of at least 200°C and a rubber-like copolymer of from 20 to 75% by weight of ethylene, 24 to 79% by weight of propylene and/or butylene-1 and of from 1 to 10% by weight, if necessary, of one or more polyenes, this process being characterized in that at a temperature of between 160° and 260°C bitumen is mixed with 0.1

to 25% by weight — referred to the bitumen — of the rubber-like copolymer in the form of a solution of this copolymer prepared at a temperature of between 160° and 260°C in 300 to 1000% by weight — referred to the copolymer — of the high-boiling hydrocarbon, which solution has a viscosity of at most 250 Poise, measured at 200°C.

3,879,324

SOLVENT-FREE, AQUEOUS RESIN DISPERSION

Robert D. Timmons, R.R. No. 2 Box 128 - 179th St., Tinley Park, Ill. 60477, and Anthony J. Castro, 127 South Cruyler, Oak Park, Ill. 60302

Filed Apr. 29, 1958, Ser. No. 725,128
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.2 EP **4 Claims**

1. Solvent free stable aqueous dispersions of synthetic resin polymers comprising; from about 0.25 to 75 weight percent resin, based upon the total composition, said resin having particle size of less than about 10 microns and selected from the group consisting of α-substituted styrene resin wherein said substituent is selected from the group consisting of chloro and alkyl having 1 to 22 carbon atoms, epoxy resins having epoxy equivalent weights of about 100 to 2,000 and thermoplastic polycarbonamide linear polyamide resins, provided all said resins are liquid from about 225° to about 400° F.; from about 0.2 to 5 weight percent of a cationic amino dispersing agent having a hydrocarbon group of from about 8 to 22 carbon atoms; and about 15 to 99 weight percent water.

3,879,325

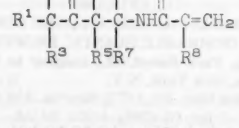
ADHESIVES PREPARED FROM AMINOPLAST COMPOSITIONS AND POLYMERS OF WATER-SOLUBLE HYDROXYALKYLATED AND ALKOXYALKYLATED COMPOSITIONS AND THE LIKE DERIVED FROM N-3-XOHYDROCARBON-SUBSTITUTED ACRYLAMIDES

John Wesley Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 111,677, Feb. 1, 1971, abandoned. This application Dec. 8, 1972, Ser. No. 313,216
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.4 UA **6 Claims**

1. A composition of matter comprising an aminoplast composition and an aqueous emulsion of an addition interpolymer of one or more polymerizable compounds selected from the group consisting of vinyl aromatic hydrocarbons, vinyl carboxylates, acrylic monomers and vinyl chloride and a polymerizable water-soluble composition consisting essentially of:

A. compounds of the formula



wherein each of R^1, R^2, R^3, R^4 and R^5 is hydrogen, a hydrocarbon or substituted hydrocarbon radical, a hydroxyalkyl radical having not more than 4 carbon atoms, or an alkoxy derivative of said hydroxyalkyl radical, at least one of R^1, R^2, R^3, R^4 and R^5 being a hydroxyalkyl radical or alkoxy derivative thereof; each of R^6 and R^7 is hydrogen or a hydrocarbon or substituted hydrocarbon radical; and R^8 is hydrogen, halogen or a lower alkyl or substituted lower alkyl radical; the substituents on said substituted radicals being halide, ether, keto, carboxy, ester, amide, nitro, cyano, thioether sulfoxy or sulfone groups; and

B. condensation dimers and trimers of said compounds.

3,879,326

PREPARATION OF LATEX FROM AQUEOUS EMULSION OF SOLVENT/POLYMER SOLUTION

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, which is a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,460
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 R **3 Claims**

1. A method of preparing a latex from an aqueous emulsion of solvent/polymer solution of precursor latex particle size, the solvent of the polymer solution being an organic solvent for the polymer and itself or as an azeotrope with water having a boiling point below that of water at atmospheric pressure, the polymer being essentially organic solvent soluble or dispersible and essentially water insoluble, and said emulsion having been prepared with the aid of an emulsifying agent, which method consists essentially of:

a. converting said emulsion to an aerosol of latex phase in an aqueous and solvent vapor phase by dispersing said emulsion into a flow of gas consisting essentially of steam at a temperature sufficiently high to vaporise solvent from said emulsion and not so high as to be detrimental to the stability of the emulsion and sufficient in quantity to vaporize essentially all of the solvent from said emulsion into said vapor phase,

b. effecting separation of the latex phase and the vapor phase from step (a) in a vacuum separator,

c. adding to the latex phase from step (b) monomer material containing and polymerizable through at least one ethylenically unsaturated group, in the amount of 0.1 to 100 parts by weight per 100 parts by weight of the polymer content of the latex phase, and selected from the class consisting of

i. the mono-ethylenically unsaturated aromatic hydrocarbon monomers containing from 8 to 18 carbon atoms,

ii. the conjugated diene hydrocarbon monomers containing not more than 12 carbon atoms,

iii. the non-conjugated diene hydrocarbon monomers containing not more that 18 carbon atoms.

iv. the mono-ethylenically unsaturated monomers containing polar groups and having not more than 18 carbon atoms, and

v. the non-conjugated diene and triene monomers containing polar groups and having not more than 22 carbon atoms,

the polar groups of (iv) and (v) being selected from the class consisting of carboxyl, hydroxyl, carbonyl, ester, ether, nitrile, amine, quaternary ammonium, amide, triazine, and halogen groups,

d. adding to the latex phase polymerization catalyst of the free radical generating type in the range of from 0.8 to 20 parts per 100 parts of the added monomer material be weight,

e. flowing the latex phase containing the monomer material and catalyst through a constriction at a pressure in the range of 1,000 to 10.000 p.s.i., and

f. subjecting the latex phase containing the added monomer material and catalyst to a temperature below the maximum temperature for stability of the latex but sufficiently high to polymerize the monomer material.

3,879,327
FORMATION OF A LATEX FROM AN ORGANIC SOLVENT DISPERSION OF A WATER INSOLUBLE POLYMER

Oliver W. Burke, Jr., Fort Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 817,494, April 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917. This application Feb. 15, 1972, Ser. No. 226,419

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 XA **21 Claims**

1. In the formation of a latex from an organic solvent dispersion of a composition of an organic solvent soluble or dispersible water insoluble polymer of one or more ethylenically unsaturated monomers containing from 2 to 20 carbon atoms, by a process which comprises:

1. providing a dispersion of the polymer composition in essentially water-immiscible volatile organic solvent which itself or as an azeotrope with water has a boiling point lower than that of water at atmospheric pressure,
2. adding water and emulsifier to said dispersion in proportions to form an emulsion having water as its continuum and emulsifying the same so that the discontinuous phase thereof is in particles at least principally of precursor latex particle size,
3. stripping the solvent from the emulsion to form a latex, and
4. recovering the latex product,

and which comprises the particular steps of:

5. providing a moving flow of gas comprising steam as an initial continuous phase,
6. dispersing the said emulsion into the flow of gas as the initial continuous phase while subjecting the phases to a decrease of pressure and maintaining the temperature thereof below the limiting temperature for stability of the emulsion, thereby vaporizing solvent from the dispersed droplets and forming latex and vapor,
7. establishing a reduced pressure zone and maintaining the same at a pressure lower than that attained in step (6),
8. establishing a flow of latex through said reduced pressure zone,
9. introducing into said reduced pressure zone the latex droplets and vapor produced by step (6) and impinging said droplets upon the flow of latex therein,
10. withdrawing vapor from said reduced pressure zone, and
11. withdrawing the combined latices from said reduced pressure zone,

the improvement which consists in the combination in the process of the further steps of:

12. passing the latex withdrawn in step (11) in contact with a surface heated in the range of 212° to 260°F. for a sufficient time to destabilize and coagulate from the latex particles of greater than colloidal size, which may be present in said latex, without substantially coagulating the latex particles of colloidal size, and
13. separating from the latex any coagulum formed.

3,879,328
CURABLE COMPOSITIONS OF POLYMERS CONTAINING LABILE HYDROXYL GROUPS

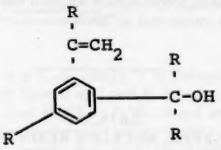
Giffin D. Jones, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 17, 1972, Ser. No. 272,442

Int. Cl. C08f *45/24*, *45/34*

U.S. Cl. 260—29.6 TA **7 Claims**

1. A curable composition consisting essentially of a polymer containing labile hydroxyl groups, a catalytic amount of an acid catalyst and a hydroxyl component selected from the group consisting of a volatile alcohol having from 1 to 4 carbon atoms, water or mixture thereof in an amount sufficient to stabilize the composition against the formation of crosslinkages, said polymer being a polymer of at least 2 weight percent of (1) a labile hydroxyl monomer selected from the group consisting of (a) vinylbenzyl alcohol having the general structure:



wherein each R independently is hydrogen or methyl, (b) 2-hydroxymethylbutadiene or (c) mixtures thereof and (2) a remaining amount of one or more ethylenically unsaturated monomers that are inert to the acid catalyst.

3,879,329
NON-ELASTOMERIC POLYURETHANE COMPOSITIONS CONTAINING CYCLIC POLYETHERS

Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 366,835, June 4, 1973, which is a continuation-in-part of Ser. No. 179,149, Sept. 9, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,398

Int. Cl. C08g *51/34*, *51/46*, *51/50*

U.S. Cl. 260—30.4 N **10 Claims**

1. A non-elastomeric, non-cellular dense, solid polymer having a density of at least about 1 gram/cc resulting from admixture of the components of a composition comprising:

A. a polymer polyol having from 3 to about 8 hydroxyl groups and a hydroxyl equivalent weight between about 75 and about 230,

B. an organic polyisocyanate,

C. a liquid modifier compound having a boiling point above about 150°C selected from the group consisting of cyclic polyethers and mixtures thereof, said polyethers being cyclic tetramers and above of ethylene oxide, propylene oxide, butylene oxide or epichlorohydrin, and

D. a non-amine-containing catalyst for urethane formation, which is an organo metal compound;

wherein Components (A) and (B) are present in amounts so as to provide an NCO:OH ratio of from about 0.8:1 to about 2:1, Component (C) is present in quantities of from about 20 to about 50 percent with the proviso that when Component (B) is an NCO-containing prepolymer containing less than about 40% NCO by weight, Component (C) is present in quantities of from about 10% to about 50% by weight of the sum of Components (A), (B), and (C); and Component (D) is present in quantities of from about 0.2 to about 10 percent by weight of the sum of the weights of Components (A), (B) and (C); and wherein said polymer can be demolded within less than about 5 minutes, without the application of an external source of heat, after admixture of said composition.

3,879,330
FOOD WRAP HAVING LOW OXYGEN PERMEABILITY AND DESIRABLE ELASTIC PROPERTIES

Stanley Lustig, Park Forest, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,652

Int. Cl. C08g *41/04*, *51/38*

U.S. Cl. 260—31.8 M **17 Claims**

1. An elastic film having an oxygen permeability of less than 30 cubic centimeters-mil/100 square inches/24 hours/atmosphere, as determined by the test procedure of ASTM-1434-66, and permanent deformation of less than 10 per cent when stretched to 50 per cent elongation at 40°F., said elastic film consisting essentially of (a) a thermoplastic urethane polymer having a Durometer A hardness of from about 60 to about

100, and (b) a vinylidene chloride polymer, said vinylidene chloride polymer being composed of from 50 to 95 weight per cent polymerized vinylidene chloride, the remainder of said vinylidene chloride polymer being at least one polymerized monomer selected from the group consisting of vinyl chloride, alkyl acrylate, alkyl methacrylate, and acrylonitrile; wherein when said thermoplastic urethane polymer has a Durometer A hardness of from about 90 to about 100, the proportion of said thermoplastic urethane polymer in said elastic film is from about 65 to about 95 weight per cent; wherein when said thermoplastic urethane polymer has a Durometer A hardness of from about 70 to about 90, the proportion of said thermoplastic urethane polymer in said elastic film is from about 35 to about 65 weight per cent; and wherein when said thermoplastic urethane polymer has a Durometer A hardness of from about 60 to about 70, the proportion of said thermoplastic urethane polymer in said elastic film is from about 15 to about 45 weight per cent.

3,879,331

POLYBUTADIENE COATING COMPOSITIONS

David J. Parker, Drexel Hill, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. Nos. 233,752, March 10, 1972, abandoned, and Ser. No. 374,568, June 28, 1973, abandoned. This application June 19, 1974, Ser. No. 481,378

Int. Cl. B65d *23/02*; **C08c** *11/22*; **C08f** *3/34*

U.S. Cl. 260—33.6 A **7 Claims**

1. In a lubricant concentrate comprising

A. particulate polyethylene;

B. a polybutadiene; and

C. an organic liquid carrier which is a solvent for (B);

the improvement consisting essentially of the presence in said concentrate of from about 0.025 through about 2 percent, by weight of the total solids in the concentrate, of a polyvinyl ether having recurring units of the structure

where

R is a branched alkyl radical of 3 through 10 carbon atoms, and having a molecular weight of from about 10,000 through about 25,000.

3,879,332

BUILT-IN TELEVISION TIMER AND LOCKING MECHANISM

Louis A. Leone, 12809 Chippewa Rd., Brecksville, Ohio 44141

Continuation-in-part of Ser. No. 361,450, May 18, 1973, Pat. No. 3,833,779. This application Nov. 12, 1973, Ser. No. 414,973

Int. Cl. H01h *7/08*

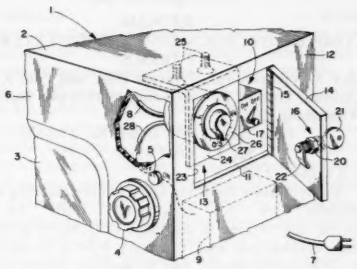
U.S. Cl. 200/33 R **10 Claims**

1. In a television including a cabinet housing operational circuitry responsive to electric power supplied on an input power cord from an external source and a viewing screen on which a pictorial display is normally produced by said operational circuitry, the improvement comprising:

means for absolute control of such television to determine the length and time of the duration of potential television operation, including

timer means for providing an electrical connection between said operational circuitry and said input power cord for energization of the former when the latter is connected to such external source to effect normally production of such pictorial display on said viewing screen, the length and time of the duration of such energization being adjustably controlled by setting of said timer means;

means for mounting said timer means in a relatively fixed position with respect to said cabinet to provide readily for



accessability to said timer means for setting thereof, and adjustable means for locking said timer means to preclude setting thereof, said adjustable means including a lock capable of selective adjustment to a first condition precluding setting of said timer means and a second condition permitting setting of said timer means,

whereby when said timer means is set for a duration of a specific length to occur at a specific time and locked and the input power cord is coupled to a source of electric energy, the television is potentially operable only for the duration which the timer means provides said connection for energization of said operational circuitry.

3,879,333

VINYL POLYMER COMPOSITIONS

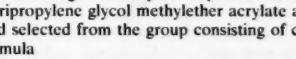
Dieter H. Klein, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

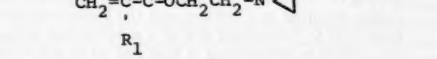
Filed Apr. 4, 1973, Ser. No. 347,826

Int. Cl. C08f *19/00*

U.S. Cl. 260—33.4 R **9 Claims**

1. A polymeric composition comprising (I) a side chain insoluble in a strongly hydrogen bonded organic media which chain is formed by reaction of an ethylenically unsaturated first monomer containing a proton donor or proton acceptor group adapted to react in a ring opening addition reaction with an aziridinyl ring and one or more second monomers copolymerizable with said first monomer said side chain being grafted to (II) a backbone soluble in said organic media said backbone consisting essentially of the product of the reaction of (IIA) tripropylene glycol methylether acrylate and (IIB) a compound selected from the group consisting of compounds of the formula





where

R_1 is hydrogen or CH_3,

R_2 is hydrogen or lower alkyl, and

R_3 is hydrogen or lower alkyl; and wherein the mass ratio of (IIA) to (IIB) is from about 99:1 to about 80:20 and wherein the mass ratio of (I) to (II) is from about 95:5 to 80:20.

3,879,334

COMPOSITION FOR SIZING AND RETEXTURIZING FABRICS

Walter A. Vredenburgh, Pleasant Hills, and Paul S. Douglas, Clairton, both of Pa., assignors to Hercules Incorporated, Wilmington, Del.

Filed July 27, 1972, Ser. No. 275,683

Int. Cl. C08f *45/28, 45/30*

U.S. Cl. 260—33.6 UA **4 Claims**

1. A composition for sizing fabrics in dry cleaning consisting essentially of a copolymer resin of alpha-methylstyrene/styrene in the range of from about 90 percent alpha-methylstyrene and 10 percent styrene to about 20 percent alpha-methylstyrene and 80 percent styrene and having a softening point (Ring & Ball) not exceeding about 110°C., said resin being dissolved in low odor mineral spirits.

3,879,335

PRODUCTION OF PIGMENTED RESIN POWDERS

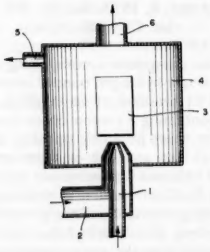
Gerhard Storck, Ruchheim; Horst Diefenbach, Ludwigshafen; Matthias Marx, Duerkheim; Otto Nagel, Neustadt; Heribert Kuerten, and Werner Weinle, both of Mannheim, all of Germany, assignors to Badische Anilin-/ & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Aug. 14, 1972, Ser. No. 280,262

Claims priority, application Germany, Aug. 14, 1971, 2140843

Int. Cl. C08f *45/06;* **C08g** *51/04*

U.S. Cl. 260—37 EP **1 Claim**



1. A process for the manufacture of pigmented resin powders which comprises:

1. mixing (a) a dispersion of a pigment in a polymeric substance dissolved in a solvent, and (b) water containing from 0.01 to 5.0 percent w/w of a water-soluble protective colloid by introducing at least one jet of water containing said protective colloid at the rate of 5 to 100 m/sec through the inner orifice of one or more nozzles having an inner and an outer concentric nozzle orifice into an impulse exchange chamber located in a mixing tank, both said chamber and said tank being filled with water containing said protective colloid and extending in the direction of entry of the jet of water together with said dispersion which is introduced into said impulse exchange chamber through said outer concentric nozzle orifice, the mean hydraulic diameter of said impulse exchange chamber being from 2 to 20 times the diameter of the inner nozzle orifice, and its length being from 2 to 30 times its hydraulic diameter, whereby said polymeric substance containing said pigment is precipitated from said solvent in the form of particles; and
2. removing said solvent and said water from said particles whereby a pigmented resin powder is formed.

3,879,336

PROCESS FOR PREPARING COLORED SYNTHETIC LEATHER

Shigeo Maeda; Minoru Ozutsumi; Isao Niimura, and Hideo Okazaki, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

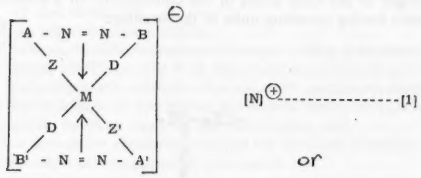
Continuation-in-part of Ser. No. 376,387, July 5, 1973, abandoned. This application Apr. 5, 1974, Ser. No. 458,191

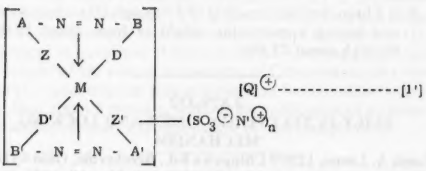
Claims priority, application Japan, July 5, 1972, 47-66647; Aug. 17, 1972, 47-81822

Int. Cl. C08g *51/66*

U.S. Cl. 260—37 N **10 Claims**

1. In a process for preparing a colored synthetic polyurethane leather by reacting a polyisocyanate with a polyol or a polyurethane, the improvement which comprises reacting the polyisocyanate with a 2:1 complex metal dye which contains an isocyanate-reactive group selected from the group consisting of amino, alkylamino, and hydroxyl and which has the formula,





wherein A and A′ are the same or different and each represent phenylene which can have non-dissociated substituents; B and B′ are the same or different and each represent coupling components which can contain non-dissociated substituents within each component and are disposed in the dye molecule so that the bridging groups D and D′ are in an ortho position relative to the bridging azo groups; Z and Z′ are the same or different and each represent —O—, or —COO— which are disposed in an ortho position relative to the azo bridging groups; D and D′ are the same or different and each represent —O—,

-NH- or -N-alkyl;
|

M represents chromium or cobalt; $[N]^+$ represents aliphatic ammonium or acyclic ammonium; $[Q]^+$ represents hydrogen, sodium, ammonium, aliphatic ammonium or acyclic ammonium; and N'^+ represents aliphatic ammonium or acyclic ammonium; and n represents an integer from 1–6.

3,879,337

ADHESIVE COMPOSITIONS

Louie G. Manino, and Frederick H. Sexsmith, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Division of Ser. No. 465,967, May 1, 1974, which is a division of Ser. No. 237,071, March 22, 1972, Pat. No. 3,830,784. This application Sept. 18, 1974, Ser. No. 507,155

Int. Cl. C08g *22/00*

U.S. Cl. 260—37 N **10 Claims**

1. An adhesive composition consisting essentially of a solution of at least one polyisocyanate normally reactive at room temperature and at least one acidic halogen-containing polymer in which is suspended at least one poly-C-nitroso aromatic compound, wherein said polyisocyanate is present in an amount between about 5 and about 60 percent, said halogen-containing polymer is present in an amount between about 10 and about 70 percent, and said poly-C-nitroso aromatic compound is present in an amount between about 2 and about 35 percent, said percentages being by weight based on the combined weight of polyisocyanate, acidic halogen-containing polymer and poly-C-nitroso aromatic compound, and

an effective amount of at least one inert, finely-divided filler material,

said adhesive composition having a total solids content in the range from about 5 to about 50 percent,

said composition being characterized by an acidity sufficient to substantially reduce isocyanate activity.

3,879,338

FRICTION ELEMENT COMPOSITION

Frank S. Grazen; Melvin L. Buike, and Frank M. Bryzinsky, all of North Tonawanda, N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 188,596, Oct. 12, 1971, Pat. No. 3,767,612, which is a continuation of Ser. No. 872,737, Oct. 30, 1969, abandoned. This application Dec. 20, 1972, Ser. No. 316,931

Int. Cl. C08g *37/18, 51/10*

U.S. Cl. 260—38 **4 Claims**

1. A friction element composition comprising a friction imparting abrasive agent, an inorganic filler and a binder composition consisting essentially of at least 60 percent by weight of a non-hydroxyalkylated hydroxy aromatic hydrocarbon-aldehyde resole containing substantially no etherified aromatic hydroxyl groups and at least 10 percent by weight of a non-hydroxyalkylated, alkylated hydroxy aromatic hydrocarbon-aldehyde novolac, wherein the alkylated groups are selected from the group consisting of:

a. alkyl groups of 1 to 60 carbon atoms,

b. cycloalkyl groups of 5 to 12 carbon atoms,

c. alkyl, aryl and cycloalkyl ketonic groups wherein the hydrocarbon portion is as defined in (a) and (b),

d. alkyl, aryl and cycloalkyl carboxylic groups wherein the hydrocarbon portion is as defined in (a) and (b),

e. aryl groups of 6 to 24 carbon atoms, and

f. aryl substituted alkyl wherein the aryl is phenyl, lower alkyl-substituted phenyl or hydroxy substituted phenyl.

3,879,339

MANUFACTURE OF SOLID OR HOLLOW BODIES FROM A COMPOSITION CONTAINING A GRANULAR FILLER

Gerard Y. Richard, Precy-sur-Oise, France, assignor to Societe d'Applications de Produits Industriels et Chimiques

Filed Aug. 10, 1972, Ser. No. 279,744

Claims priority, application France, Aug. 16, 1971, 71.29865

Int. Cl. C08g *51/04*

U.S. Cl. 260—38 **8 Claims**

1. Process for the manufacture of solid or hollow bodies, used especially for coring and moulding in founding, as well as for the manufacture of refractory products, abrasive products such as grinding wheels moulded or cast construction materials for building and civil engineering, from a composition comprising at least one granular filler which is intimately mixed with at least one acid curing organic resin which comprise, after shaping and clamping the said composition, curing of the said resin at ambient temperature and over a period of between a few seconds and a few minutes, by adding gaseous or aerosol sulfur dioxide after first incorporating in said composition before shaping an oxidizing agent in a liquid or solid form which reacts with sulfur dioxide to form sulfuric acid without forming sulfur trioxide.

3,879,340

COATING COMPOSITIONS CONTAINING SURFACE ACTIVE ADDITION POLYMERS

Kazys Sekmakas, Chicago, and Robert O. Yates, Arlington Heights, both of Ill., assignors to DeSoto Inc., Des Plaines, Ill.

Filed Nov. 9, 1970, Ser. No. 88,251

Int. Cl. C08f *43/08, 45/34*

U.S. Cl. 260—40 R **4 Claims**

1. An organic solvent solution thermosetting coating composition comprising organic solvent which is removed when the coating is deposited and baked, said solvent having dissolved therein a resin vehicle comprising a methylolated acrylamide-containing interpolymer and which exhibits poor flow and wetting characteristics evidenced by the deposition of a film which, after baking, contains microscopic surface ridges visible under a microscope at 50 magnifications, said coating composition including from 0.01 to 5%, based on the weight of the resin vehicle, of a surface active addition polymer consisting essentially of (1) monoethylenic ester having a straight chain saturated aliphatic terminal hydrocarbon group containing at least 4 carbon atoms, and (2) monoethylenic ester having a branched chain terminal hydrocarbon group, the weight ratio of these two components being from 90:10 to 10:90, whereby the overall properties of the coating are determined by the characteristics of the said resin vehicle and the flow and wetting characteristics of the coatings are determined by said surface active addition polymer.

3,879,341

DYEING POLYESTERS

Kenneth T. Barkey, and Douglas C. May, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,397

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 P **17 Claims**

1. In a process for making a uniformly dyed polyester article using a dry dye concentrate comprising powdered meltable or heat softenable dye with a granulated polyester resin of the type of additional polyester to be dyed, said dye being compatible with said polyester and being present in said mix in an amount of from about 2 to about 10 weight percent, based on the weight of said polyester, blending said dye concentrate with said additional polyester to form an extrudable mixture, and extruding said mixture by means of a screw extruder,

the improvement in which extruder feed screw instability of the mixture due to the presence of the meltable dye is overcome by the method comprising:

providing as the dye used to make said dye concentrate a heat stable dye which has its softening or melting point below the agglomerating temperature of said polyester and which is heat diffusible into said resin below said agglomerating temperature,

uniformly mixing said dye with said polyester particles to form a dry mix,

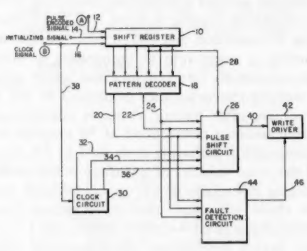
heating said dry mix at a dye diffusing temperature at least sufficient to soften or melt the dye but not sufficient to agglomerate said granulated polyester, and

continuing said heating, for a period of time (a) at least sufficient to heat diffuse substantially all of said softened or melted dye into said granulated polyester and (b) at least sufficient to heat-set the dye to the extent that at least about 90% of the dye cannot be extracted from the concentrate with a solvent for said dye, thereby forming a dry dye-polyester resin concentrate containing diffused and heat-set dye which can be blended with said additional polyester and extruded from a screw extruder free of said feed screw instability.

3,879,342
PRE-RECORDED DIGITAL DATA COMPENSATION SYSTEM

Ramesh S. Patel, Dallas, Tex., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 28, 1973, Ser. No. 429,450
Int. Cl. G11b *5/09*
U.S. Cl. 360—45 **17 Claims**



1. In a digital data recording system wherein digital data is pulse encoded in the three frequency digital code with the leading edge of a pulse occurring in the middle of a binary one bit cell and at the junction between successive binary zero bit cells so that pulses are spaced from each other in multiples of one-half bit cell increments, said pulse encoded data being in a form for subsequent recording on a magnetic medium and wherein certain patterns of encoded pulses produce pulse shifting when subsequently retrieved, a digital data compensation system which compensates for such pulse shifting prior to the recording of these pulses on the magnetic medium said compensation system comprising:

means for temporarily storing a sequence of encoded pulses in one-half bit cell increments so as to thereby form at any one time a pattern of stored pulses;

means for decoding the pattern of stored pulses so as to detect when either of two particular patterns of stored pulses is present in said temporary storage means; and

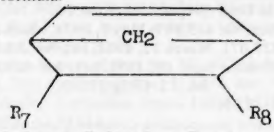
means, responsive to said decoding means, for shifting a pulse within the particular pattern of stored pulses a defined amount so as to cancel out the pulse shift which would otherwise appear when the particular pattern is recorded and subsequently retrieved.

3,879,343
STABILIZING HYDROCARBON COPOLYMERS OF BICYCLIC MONOMERS AGAINST GELATION DURING BULK PROCESSING

Marjorie Ruth DeBrunner, and John Joseph Verbanc, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. Nos. 836,154, June 24, 1969, abandoned, and Ser. No. 152,403, June 11, 1971, abandoned. This application May 30, 1973, Ser. No. 365,869
Int. Cl. C08d *11/04*
U.S. Cl. 260—45.7 S **14 Claims**

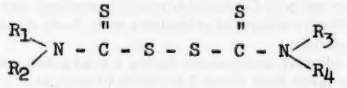
1. In a process of stabilizing against gelation, during the shearing phases of bulk processing, a normally solid elastomeric hydrocarbon copolymer prepared from a monomer mixture comprising an α-monoolefin and a norbornene having the general formula:



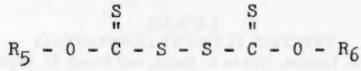
where R_7 is hydrogen alkyl, aryl, or alkenyl,

R_8 is hydrogen or alkyl, or

R_7 and R_8 are joined to form an alkylene group, the improvement which comprises mixing with said copolymer before bulk processing thereof under conditions of shear effective to cause substantial gelation thereof, about 2–100 mole %, per mole of norbornylene moities in the copolymer of a stabilizer selected from the group consisting of (a) a thiuram disulfide having the general formula



where R_1, R_2, R_3, and R_4 are independently C_1–C_{18} alkyl, C_6–C_{18} aryl and saturated derivatives thereof, alkaryl, and aralkyl, and wherein a pair of R's on the same N atom can be C_4-C_5 alkylene or 3-oxapentalene, and (b) a xanthogen disulfide having the general formula:



where R_5 and R_6 are independently selected from the group consisting of C_1–C_{18} alkyl, C_6–C_{18} aryl and saturated derivatives thereof, alkaryl, and aralkyl.

3,879,344
UNSATURATED ORGANO-TIN MERCAPTIDE STABILIZERS FOR HALO-VINYL POLYMERS

Georges Bakassian, St. Foy Les Lyon, Rhone, France, assignor to Rhone-Poulenc S.A., Paris, France

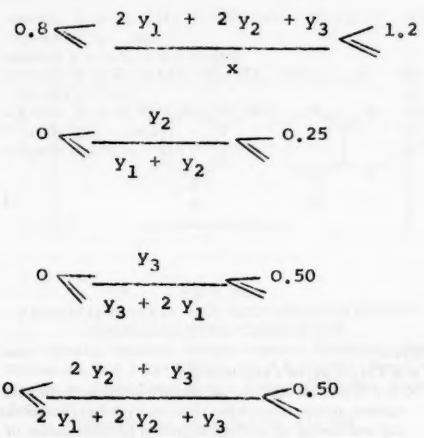
Division of Ser. No. 350,122, April 11, 1973, Pat. No. 3,818,062. This application Dec. 7, 1973, Ser. No. 423,375
Claims priority, application France, Apr. 12, 1972, 72.12771; Mar. 14, 1973, 73.09097
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 S **7 Claims**

1. A composition which comprises a halogenated vinyl resin and, as stabiliser therefor, 0.2 to 3% by weight of at least one unsaturated organo-tin mercaptide prepared by the process which comprises in step (a) reacting, to form an intermediate, x mols of a mercaptocarboxylic acid of the formula:

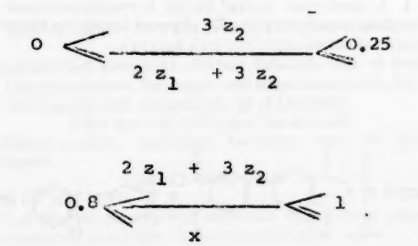
HS—X—COOH

with a hydroxylic component, which is y_1 mols of a compound of the formula HO—Y—OH or a mixture thereof with at least one of y_2 mols of a compound of formula HO—Y'—OH and y_3 mols of a compound of formula ROH, wherein X represents

a straight or branched chain alkylene group of 1 to 4 carbon atoms, or a phenylene group, Y represents a straight or branched chain, aliphatic, divalent hydrocarbon radical with at most 10 carbon atoms, or a cycloaliphatic radical with 5 or 6 ring carbon atoms, the radical Y being divalent with at least one of an ethylenic and acetylenic bond and a maximum of two ethylenic and two acetylenic bonds, Y′ represents an alkylene group with 1 to 10 carbon atoms, or a cycloalkylene group with 5 or 6 ring carbon atoms, R represents a straight or branched chain alkyl or alkenyl radical with at most 8 carbon atoms, a cycloalkyl or cycloalkenyl radical with 5 or 6 ring carbon atoms, or a phenylalkyl group, the alkyl substituent of which contains 1 to 4 carbon atoms, and x, y_1, y_2 and y_3 are subject to the following inequalities:



and in step (b) reacting the intermediate with a tin component, which is z_1 mols of a diorgano-tin derivative of formula R_1R_2SnO or $R_1R_2SnCl_2$; or a mixture of z_1 mols of the diorgano-tin derivative with z_2 mols of a monoorgano-tin derivative, which is a stannoic acid monomer or a polymer thereof with recurring units of formula $R_1SnO_{1.5}$ or of formula R_1SnCl_3, $R_1Sn(OH)Cl_2$ or $R_1Sn(OH)_2Cl$, wherein each of R_1 and R_2, which are the same or different, represents a straight or branched chain alkyl group with 1 to 10 carbon atoms, and x, z_1 and z_2 are subject to the following inequalities:



3,879,345
SELF-EXTINGUISHING POLYSTYRENE RESIN COMPOSITION

Shogi Furukawa; Yuzo Sonoyama, and Akira Ohi, all of Sakai, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Sept. 6, 1973, Ser. No. 394,690

Claims priority, application Japan, Sept. 18, 1972, 47-93458

Int. Cl. C09k *3/28*

U.S. Cl. 260—45.95 R **5 Claims**

1. A self-extinguishing resin composition consisting essentially of

A. polystyrene resin, and

B. flame retarding agent in an amount of at least 2% by weight and sufficient to impart a self-extinguishing property to the resin composition, said flame retarding agent consisting essentially of a substantially equimolar mixture of

1. a material selected from the group consisting of tricresyl phosphate, triphenyl phosphate and mixtures thereof, and

2. tetrabromobisphenol A.

3,879,346
THERMOPLASTICS WITH GOOD ANTISTATIC PROPERTIES AND IMPROVED PROCESSING PROPERTIES

Hans-Helmut Friedrich, Philippstaal, Germany; Helmut Linhart, Reinach, Switzerland, and Hermann Otto Wirth, Bensheim-Auerbach, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 9, 1973, Ser. No. 377,669

Claims priority, application Germany, July 11, 1972, 2234016; May 17, 1973, 2324888

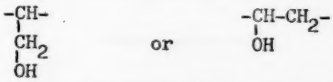
Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 S **10 Claims**

1. Antistatic thermoplastics which contain 0.01 to 5 per cent by weight, relative to the thermoplastic, of a compound or mixtures of the formula I

$$R—X—(CH_2—Y—O)_nH \qquad (I)$$

in which X denotes —O—, —S—or $—SO_2$, Y denotes



n denotes the nubmer 1 to 5 or n as an average value denotes a number between 0.5 and 8 and R, in the case of n =1, denotes alkyl or phenylalkyl with a total of 12 to 30 C atoms, which can be linear or have short chain branches of at most 2 C atoms and can also be interrupted by one or more different groups —O—, —S—, $—CO_2—$, —HC=CH—, phenylene or

or R, in the case of n =2 to 5 or n =0.5 to 8, denotes alkyl with 8 to 30 C atoms which may be linear or branched and can also be interrupted by —O—, —S—, $—CO_2—$, —HC=HC—or

phenylalkyl with an alkylene radical of 1 to 3 C atoms which can additionally be substituted at the phenyl nucleus by alkyl with up to 18 C atoms, with the total radical having to have at least 9 C atoms, alkylphenyl with 9–30 C atoms, alkoxyphenyl with 3 to 12 C atoms in the alkyl radical, alkoxycarbonylphenyl with 2 to 18 carbon atoms in the alkyl radical or alkylated cyclohexyl with 9 to 30 C atoms and, optionally in addition to further additives, at most 1 per cent by weight of hydrophilic polymers, relative to the thermoplastic.

3,879,347

HIGH MOLECULAR, STATISTICAL COPOLYCARBONATES

Volker Serini; Hugo Vernaleken, both of Krefeld, and Hermann Schnell, Krefeld-Uerdingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

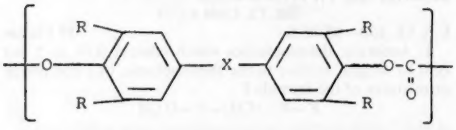
Filed June 20, 1972, Ser. No. 264,643

Claims priority, application Germany, Mar. 11, 1972, 2211957

Int. Cl. C08g *17/005, 17/13*

U.S. Cl. 260—47 XA **19 Claims**

1. Statistical copolycarbonates based on aromatic dihydroxy compounds and comprising at least 50 mol % of identical or different tetraalkylated structural units of the general formula



where R is $-CH_3$, $-C_2H_5$ or $-CH(CH_3)_2$ and X is a single bond, an alkylene or alkylidene radical with up to 5 carbon atoms or a cyclohexylene radical or a cyclohexylidene radical and the copolycarbonate has a molecular weight, Mw of more than 20,000.

3,879,348

SAPONIFICATION-RESISTANT POLYCARBONATES

Volker Serini; Hermann Schnell, and Hugo Vernaleken, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

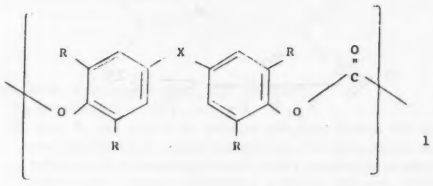
Continuation of Ser. No. 209,420, Dec. 17, 1971, abandoned. This application Oct. 28, 1973, Ser. No. 408,884

Claims priority, application Germany, Dec. 22, 1970, 2063050; Dec. 22, 1970, 2063052

Int. Cl. C08g *17/13*

U.S. Cl. 260—47 XA **12 Claims**

1. High molecular weight polycarbonates consisting essentially of bifunctional structural units wherein said bifunctional structural units are those of the formula 1



wherein:

R is CH_3, C_2H_5 or $CH(CH_3)_2$ and

X is a bond, an alkylene or alkylidene group with 1 to 5 carbon atoms, or cyclohexylene or cyclohexylidene radical and having an average degree of polymerization of at least 55.

3,879,349

HOMOPOLYMERIZATION OF ACETYLENE SUBSTITUTED POLYIMIDE POLYMERS

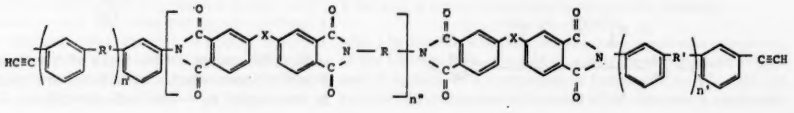
Norman Bilow, Los Angeles, and Abraham L. Landis, Northridge, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 12, 1973, Ser. No. 415,083

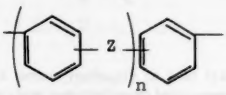
Int. Cl. C08g *20/32*

U.S. Cl. 260—47 UA **4 Claims**

1. A cured resin derived by the homopolymerization of acetylene substituted polymide oligomer having the following general structure:



wherein R is



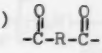
wherein Z is O, CH_2, S, CO, SO_2—CF_2—$_m$, or —CF_2—O—CF_2—, and
wherein n is 0–5, m is 0–5, and
wherein R′ is O, S, CO, CH_2, SO_2, —CF_2—$_m$, or —CF_2—O—CF_2—, and
wherein X is O, S, CH_2, CO, SO_2 —CF_2—$_m$, or —CF_2—O—CF_2—, and
wherein n' is 0 to 5 and n'' is 0 to 5.

3,879,350
AMMONIUM SALTS AND POLYMERIZATION OF FORMALDEHYDE THEREWITH
Isamu Suzuki; Shinichi Ishida; Noboru Ohshima; Junzo Masamoto, and Junzo Ohtake, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Oct. 26, 1973, Ser. No. 410,239
Int. Cl. G08g *1/02*
U.S. Cl. 260—67 FP **7 Claims**

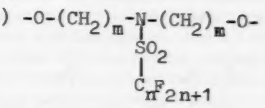
1. Process for producing macromolecular polyoxymethylene which comprises polymerizing substantially anhydrous formaldehyde in the presence of a diammonium salt consisting essentially of an ammonium cation having four organic groups attached to the nitrogen atom thereof selected from the group consisting of alkyl, aralkyl, alkoxyalkyl and alkylaryl each containing at least two carbon atoms, wherein said groups can be the same or different and two of the same can form a ring with each other, and an aliphatic dicarboxylate anion having a side chain containing at least six carbon atoms and selected from the group consisting of alkyl, alkoxy, polyalkylene, alkenyl and polyalkenyl chain.

3,879,351
FLAME-RESISTANT HIGH MOLECULAR WEIGHT LINEAR POLYESTERS
Friedrich-Karl Rosendahl; Herbert Pelousek, both of Bayer Aktiengesellschaft, Dormagen, and Hans Niederprüm, Bayer Aktiengesellschaft, Leverkusen, all of Germany
Filed Apr. 19, 1974, Ser. No. 462,496
Claims priority, application Germany, Apr. 19, 1973, 2320006
Int. Cl. C08g *17/08*
U.S. Cl. 260—75 N **8 Claims**

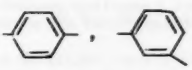
1. A filament-forming high molecular weight linear polyester consisting essentially of the structural units

a)  ,

b) -O-R′-O- and

c) 

wherein the stoichiometric amount of said units b) and c) is equivalent to the stoichiometric amount of said units a, and
wherein the amount of said units c) is 0.1 to 15 percent by weight of said polyester, and
wherein
R represents



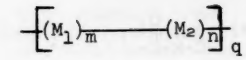
or a mixture thereof,
R′ represents the radical of a glycol without the OH groups,
n represents an integer of from 1 to 10 and
m represents an integer of from 2 to 10.

3,879,352
CONTINUOUS PROCESS FOR POLYMERIZING α,α-DISUBSTITUTED-β-PROPIOLACTONES
William A. Ames, Longview; James J. Ward, Henderson, and Edward H. Carter, Jr., Longview, all of Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 6, 1973, Ser. No. 330,140
Int. Cl. C08g *17/017*
U.S. Cl. 260—78.3 R **16 Claims**

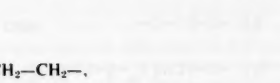
1. In a process for the preparation of a polymer of an α,α-dialkyl-β-propiolactone which process comprises polymerization of the said α,α-dialkyl-β-propiolactone in contact with a polymerization initiator and in the presence of solid particles of polymer of the said α,α-dialkyl-β-propiolactone wherein said particles are kept in vigorous motion in an inert gaseous atmosphere, the improvement which comprises controlling the average particle size of the polymer particles within the reactor by removing a portion of the polymer particles from the reactor, grinding said particles to a smaller particle size, and returning said smaller particles to the reactor.

3,879,353
LINEAR COPOLYMERS HAVING PENDANT PEROXYCARBONATE ESTER FUNCTIONALITY, THEIR SYNTHESIS AND USE
James E. Crawford, Adrian, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation of Ser. No. 177,115, Sept. 1, 1971. This application Jan. 15, 1973, Ser. No. 323,994
Int. Cl. C08f *1/60, 27/12;* **C07c** *69/60*
U.S. Cl. 260—77.5 R **24 Claims**

1. A process for the preparation of a linear copolymer having pendant peroxycarbonate ester functionality from an acid salt of a linear copolymer and a carbonate, which comprises:
mixing the acid salt of a linear copolymer of the formula

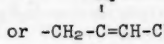


wherein
M_1 is $-CH_2-CH_2-$,

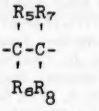


where,
R_1 is $-H$,

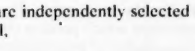
with R' being $-CH_3$, $-C_2H_5$,
R_2 is $-H$,



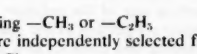
or phenyl
R_3 is $-H$, $-CH_3$, $-OR''$
with R'' being alkyl of 1 to 4 carbon atoms,
R_4 is $-H$, $-F$, $-Cl$, $-Br$ or $-CH_3$
M_2 is



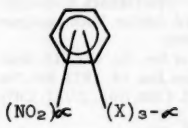
where, R_5 and R_6 are independently selected from $-H$, $-F$, $-Cl$,



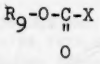
with R''' being $-CH_3$ or $-C_2H_5$
R_7 and R_8 are independently selected from $-H$, $-F$, $-Cl$,



phenyl or



with R^{IV} being an alkyl of 1 to 8 carbon atoms, α is 0 to 3, and X is a halogen
m is 1 to 1000
n is 1 to 1000
q is 4 to 1000
with a carbonate of the formula



wherein
R_9 is an alkyl of 1 to 7 carbon atoms, alkenyl of 1 to 4 carbon atoms, aryl or substituted aryl, and
X is halogen
in a reaction medium, comprising water or mixtures of water and lower alkyl alcohols and in the presence of hydrogen peroxide or ozone at temperatures ranging from about −15°C. to 200°C. so as to form said linear copolymer having pendant peroxycarbonate ester functionality.

3,879,354
POLYLACTAM POWDERS BY ANIONIC POLYMERIZATION
Eugene Frederick Bonner, Fanwood, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed June 26, 1973, Ser. No. 373,880
Int. Cl. C08g *20/18*
U.S. Cl. 260—78 L **15 Claims**

1. A process for producing lactam polymers in fine particulate form which comprises anionically polymerizing lactam monomer in bulk at a temperature above the melting point of the lactam monomer and then quenching the reaction before the polymerization system reaches a solid phase so as to thereby produce said polymers in fine particulate form, said quenching being conducted either with sufficient amounts of a chemical quenching means to dead stop the reaction or by thermally quenching the reaction to a temperature at which the polymerization will not proceed.

3,879,355
ARYLENE SULFIDE POLYMER CURED WITH THE AID OF CERTAIN COMPOUNDS
Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 29, 1973, Ser. No. 420,256
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **10 Claims**

1. A composition of matter comprising an arylene sulfide polymer and 0.5 to 10 weight percent based on the weight of said arylene sulfide polymer of a compound selected from the group consisting of
a. aluminum phosphate
b. a polyfunctional benzene derivative in which at least two positions on the benzene nucleus are replaced by a functional group selected from OH and NH_2 with the substitution being in the meta or para position if only two positions are substituted;
c. a metal salt selected from cobalt sulfate, cobalt acetate, ferrous sulfate, or cupric naphthenate; and
d. ammonium persulfate.

3,879,356
LIGHT-SENSITIVE POLYMERIC COMPOSITIONS
James G. Pacifici, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 29, 1973, Ser. No. 392,725
Int. Cl. C08f *3/34, 15/10*
U.S. Cl. 260—79.5 NV **15 Claims**

1. A solid light sensitive polymer comprising a polymer selected from the group consisting of polyvinyl alcohol, polyvinyl alcohol-co-vinyl acetate, polyvinyl alcohol-co-vinyl benzoate and polyvinyl alcohol-co-vinyl acetate-co-vinyl benzoate having a light-sensitive stilbene moiety selected from the

group consisting of stilbenebenzimidazole, stilbenebenzoxazole, stilbenebenzotriazole, and stilbenebenzothiazole attached to the polymer backbone by the reaction of at least one hydroxy group on the polymer backbone with at least one acid halide group of said light-sensitive moiety.

3,879,357

PULVERIZABLE ACRYLIC RESINS

Frank Wingler, Leverkusen; Richard Müller, Bergisch Neukirchen; Gerd Wassmuth, Leverkusen; Rudolf Erdmenger, Bergisch Gladbach, and Martin Ullrich, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1974, Ser. No. 437,210

Claims priority, application Germany, Feb. 1, 1973, 2304847

Int. Cl. C08f *1/04, 15/02, 15/40*

U.S. Cl. 206—80.8 **9 Claims**

1. A process for producing pulverizable acrylic resins which have an average molecular weight of 500 to 10,000, a glass transition temperature of 40° to 70°C and an acid number of 55 to 120 mg of KOH/g of resin, said process comprising preparing a solvent-free monomer mixture of

I. 0 to 55 mol % of styrene, α-methylstyrene, methyl methacrylate or mixtures thereof,
II. 10 to 25 mol % of acrylic acid, methacrylic acid or mixtures thereof,
III. 0 to 70 mol % of at least one ester of methacrylic acid containing 2 to 18 carbon atoms in the alcohol component and
IV. 20 to 50 mol % of at least one ester of acrylic acid containing 1 to 18 carbon atoms in the alcohol component,

continuously feeding said mixture into a first polymerization zone, continuously polymerizing said mixture in said first zone under steady state and perfectly agitated conditions at temperatures from 100° to 150°C. in the presence of 0.1 to 1 percent by weight of an organic initiator which decomposes into free radicals at a temperature below 100°C. to a conversion of 35 to 60 mol %, continuously withdrawing polymerization reaction mixture from said first zone and then polymerizing withdrawn reaction mixture in a second polymerization zone (tubular plug flow reactor) at temperatures from 130° to 170°C. in the presence of 0.1 to 1 percent by weight of an organic initiator which decomposes into free radicals at a temperature above 100°C., said polymerization in said second zone (tubular plug flow reactor) being carried out to a conversion of at least 94 mol % and under non-steady state conditions which prevent back mixing of the polymer produced in said second polymerization zone with polymerization reaction mixture from said first polymerization zone and each said percent by weight being based on the weight of the monomer mixture.

3,879,358

NITRATED POLYMERS WITH SATURATED HYDROCARBON BACKBONE

Donald R. Lachowicz, Fishkill, and Charles B. Holder, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 148,133, May 28, 1971. This application Jan. 22, 1973, Ser. No. 325,470

.. .. Cl. C08f *15/40, 17/00*

U.S. Cl. 260—80.78 **6 Claims**

1. A process for preparing a nitrated polymer which comprises:

A. contacting a backbone polymer having a saturated hydrocarbon chain portion and plurality of pendant hydrocarbon groups each containing a moiety of the formula:

wherein R^a and R^b are independently selected from the group consisting of hydrogen and alkyl of from 1 to 16 inclusive carbon atoms, with dinitrogen tetroxide at a temperature of about −30 to about 20°C thus forming a nitrated backbone polymer product having incorporated therein nitro and nitrite groups wherein the amount of dinitrogen tetroxide introduced is from about 0.00001 to about 0.1 mole/g. of the backbone polymer and

B. recovering the said nitrated backbone polymer product from the reaction mixtures.

3,879,359

HIGH VINYLIDENE CHLORIDE POLYMER CONTENT COATING RESINS AND METHOD OF PREPARATION

Paul E. Hinkamp, Midland, and Duane F. Foye, Merrill, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 243,092, April 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 85,798, Oct. 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 880,389, Nov. 26, 1969, abandoned. This application Oct. 29, 1973, Ser. No. 410,942

Int. Cl. C08f *1/13, 15/40*

U.S. Cl. 260—80.81 **1 Claim**

1. A process for preparing, in aqueous emulsion, interpolymers of from about 88 to 93 mole percent vinylidene chloride and from about 12 to 7 mole percent of a mixture of acrylonitrile and methyl methacrylate said mixture consisting of a molar ratio of acrylonitrile to methyl methacrylate of from about 1:1 to 4:1 such interpolymers having an exceptionally narrow compositional range and having enhanced solubility in organic solvents, said process consisting of the sequential steps of

1. dissolving acrylonitrile in an acqueous emulsion composed essentially of water, emulsifier and polymerization catalyst, said acrylonitrile being in an amount sufficient to satisfy the partition coefficient of acrylonitrile between the water and subsequently added monomer phases containing acrylonitrile to prevent the extraction of acrylonitrile from said subsequently added monomer phases,
2. heating said emulsion to a temperature of about 50°C.,
3. maintaining said emulsion at a substantially constant temperature between about 50°C. and about 65°C. under autogenous pressure while adding a second monomer charge in an amount between about 3 and 20 weight percent of the total monomeric materials to be polymerized wherein said second monomer charge is composed of a ratio of monomers sufficient to form an interpolymer of from about 88 to 93 mole percent vinylidene chloride and from about 12 to 7 mole percent of a mixture of acrylonitrile and methyl methacrylate said mixture consisting of a molar ratio of acrylonitrile to methyl methacrylate of from about 1:1 to 4:1,
4. maintaining the reaction at a substantially constant temperature between about 50°C. and 65°C. under autogenous pressure, and at the termination of the polymerization of said second monomer charge but prior to a pressure drop of greater than about 2 p.s.i., adding the remaining monomers to be polymerized in substantially the same ratio as present in said second monomer charge and at a rate of between about 4.5 and 25 percent of said remaining monomers per hour; then upon completion of monomer addition,
5. continuing the polymerization reaction at a temperature of between about 50°C. and about 65°C. under autogenous pressure until about a 50 percent drop in reaction pressure occurs, then

6. substantially immediately cooling the reaction to a temperature below about 50°C. and removing unreacted monomer.

3,879,360
PROCESS FOR THE BULK-POLYMERIZATION OF ACRYLONITRILE

Luigi Patron; Alberto Moretti, both of Venezia; Raffaele Tedesco, Mestre, and Renato Pasqualetto, Porto Marghera, all of Italy, assignors to Montedison Fibre S.p.A., Milan, Italy

Filed Dec. 26, 1973, Ser. No. 427,852

Claims priority, application Italy, Jan. 3, 1973, 19017/73

Int. Cl. C08f *3/76, 15/02, 15/16*

U.S. Cl. 260—85.5 R **5 Claims**

1. In a process for the bulk polymerization of acrylonitrile or a mixture of acrylonitrile with up to about 50 mol percent of at least one other ethylenically unsaturated monomer copolymerizable therewith, which comprises carrying out the polymerization using:

a. a continuous or semi-continuous polymerization procedure,

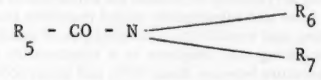
b. a free-radical catalyst system having a decomposition rate constant (Kd) greater than 1 $hr.^{-1}$ and selected from the group consisting of: (1) an organic hydroperoxide, an oxidizable sulphoxy compound, or sulphur dioxide and a nucleophilic compound; (2) an organic hydroperoxide and a monoester of sulphurous acid; and (3) an organic hydroperoxide, a magnesium alcoholate and a dialkyl sulphite;

c. a residence time (Q) at least sufficient to half-decompose the catalyst, and

d. a catalyst concentration at least equal to $2 \times 10^{-3} \times Q$ moles/liter, wherein (Q) is the residence time in hours; an improvement according to which the polymerization is carried out in the co-presence of not more than 3,000 ppm, based on the weight of the monomers, of a mercapto compound having the general formula:

$$R_1—SH$$

wherein R_1 is a linear or branched chain aliphatic radical having from 1 to 20 carbon atoms and optionally containing in the chain, an —OH or —SH group, and not more than 2 percent by weight, based on the weight of the monomers, of a basic nitrogen containing compound selected from the group consisting of an amide of the formula:



wherein R_5, R_6 and R_7 are independently selected from the group consisting of hydrogen and an alkyl group having from 1 to 6 carbon atoms and an aliphatic, cycloaliphatic or aromatic, primary, secondary or tertiary amine.

3,879,361
POLYMERISATION PROCESS

Ronald John Wyatt, Runcorn, and Edward McKillop Nicholl, Stockton-on-Tees, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 10, 1972, Ser. No. 305,331

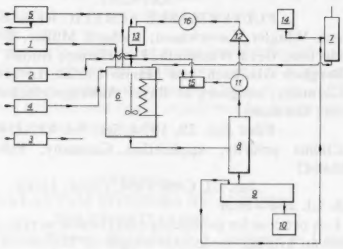
Claims priority, application United Kingdom, Nov. 22, 1971, 54119/71

Int. Cl. C08f *1/56, 1/30*

U.S. Cl. 260—80.78 **12 Claims**

1. A process for the production of copolymers of ethylene and an alpha-olefine containing from three to 10 carbon atoms, which comprises:

a. continuously introducing to a polymerisation zone ethylene and a liquid alpha-olefin containing from three to 10 carbon atoms in which the catalyst is the product of reacting a transition metal complex of formula RmMXp with a substantially inert matrix material having a hydroxylic surface which is free from adsorbed water, wherein M is a transition metal of Groups IVA to VIA of the Periodic Table, R is a hydrocarbon group or substituted hydrocarbon group, X is a monovalent ligand such as a halogen and *m* and *p* are integers, *m* having a value of from 2 to the highest valency of the metal M and *p* having a value of from 0, to 2 less than the valency of the metal M,



b. continuously reacting the ethylene and alpha-olefine in the liquid alpha-olefine so as to produce a slurry of copolymer particles suspended in the alpha-olefine,

c. continuously removing from said zone said slurry of copolymer particles suspended in liquid alpha-olefine containing any unreacted ethylene, and

d. continuously separating the copolymer particles under such a pressure that the alpha-olefine is reliquifiable by cooling without compression and recycling alpha-olefine to said polymerisation zone.

3,879,362
POLYMERISATION PROCESS

Geoffrey Reginald Chalfont; Ronald Alfred Crump, both of Horsham, and Prem Sagar Thukral, Carshalton Beeches, all of England, assignors to BP Chemical International Limited, London, England

Filed June 8, 1973, Ser. No. 368,269

Claims priority, application United Kingdom, June 12, 1972, 27245/72

Int. Cl. C08f *1/66, 3/06, 15/04*

U.S. Cl. 260—88.2 R **20 Claims**

1. A process for the preparation of a polymerisation catalyst comprising (I) heating together a support material comprising silica, alumina, zirconia or thoria or composites therof and a titanium compound at a temperature in the range 150°–1,200°C and (II) incorporating in the product from (I) under substantially anhydrous conditions a chromium compound and heating at a temperature in the range 100°–1,700°C to produce an active polymerisation catalyst.

3,879,363
POLYMERISATION PROCESS

Geoffrey James Gammon, Wenvoe, Wales, and Phillip Lewis Addleston, Nr. Weybridge, England, assignors to BP Chemical International Limited, London, England

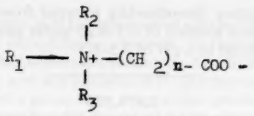
Filed July 5, 1972, Ser. No. 269,171

Claims priority, application United Kingdom, July 5, 1971, 31392/71

Int. Cl. C08f *1/11*

U.S. Cl. 260—92.8 W **10 Claims**

1. A process for the aqueous dispersion homopolymerisation or copolymerisation of a vinyl halide monomer which process comprises homopolymerising or copolymerising said monomeric material in aqueous dispersion in the presence of a free radical initiator and a dispersion stabiliser essentially consisting of an insoluble inorganic phosphate dispersion agent and an amphoteric surfactant of the general formula



where R_1, R_2, and R_3 are alkyl, aryl or alkaryl radicals and n is an integer equal to or greater than 1

3,879,364

POLYMERIZATION OF VINYL CHLORIDE POLYMERS AND COPOLYMERS AND PRODUCTS

Thomas Kemp, Bois-Colombes, and Leon Badguerahanian, Montlignon, both of France, assignors to Products Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Continuation of Ser. No. 7,359, Jan. 30, 1970, abandoned, which is a continuation of Ser. No. 608,495, Jan. 11, 1967, abandoned. This application July 18, 1973, Ser. No. 380,354

Claims priority, application France, Jan. 19, 1966, 66.46461; Nov. 30, 1966, 66.85628

Int. Cl. C08f *1/11*

U.S. Cl. 260—92.8 W **9 Claims**

1. A process for suspension and fine suspension polymerization of unsaturated monomers, at least 50% by weight of which is vinyl chloride, comprising the steps of preparing a seed product by polymerizing an aqueous medium containing less than 37% by weight monomer for suspension polymerization or by homogenizing and polymerizing an aqueous medium containing less than 47% by weight monomer for fine suspension polymerization, in the presence of a water-insoluble, monomer-soluble catalyst in an amount in excess of the amount required for polymerization of the seed mixture, said catalyst having a half-life such that the catalyst consumed in the preparation of the seed product is between 5 to 50% of the total catalyst used, combining said seed product, the polymer particles of which contain the excess catalyst, with a mixture consisting essentially of water and monomer in a reaction zone in amounts to provide a polymerization medium in which water constitutes the continuous phase containing less than 50% monomer plus polymer from the seed product for suspension polymerization and less than 60% monomer plus polymer from the seed product for fine suspension polymerization in a weight ratio of polymer in the seed product to the monomer or mixtures of monomers plus polymer from the seed product of 0.01 to 0.5 and polymerizing the resulting mixture at a temperature within the range of 10° to 85°C.

3,879,365

HYDROXYETHYL HYDROXYPROPYL METHYLCELLULOSE AS A PROTECTIVE COLLOID IN VINYL CHLORIDE POLYMERIZATION

George K. Greminger, Jr., and Earl H. Johnson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 7, 1974, Ser. No. 431,272

Int. Cl. C08f *3/30, 15/02, 15/08*

U.S. Cl. 260—92.8 R **3 Claims**

1. In the process of polymerizing vinyl chloride monomer in suspension in the presence of a protective colloid the improvement consisting of:

using as said protective colloid from about 0.05 to 5 percent based on the weight of monomer of a hydroxyethyl hydroxypropyl methylcellulose ether having a thermal gel point greater than about 70°C., a hydroxyethoxyl content of about 10–22 weight percent, a hydroxypropyl content of about 14–32 weight percent, a methoxyl content of about 6–12.5 weight percent, a total degree of substitution of from greater than about 1.5 up to 3.0. and a viscosity of from about 30 to 4,000 cps at two percent concentration at 20°C. in the polymerization system.

3,879,366

MODIFICATION OF POLYMER-LITHIUM COUPLED WITH POLYHALIDES

Charles M. Selman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 107,579, Jan. 18, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,453

Int. Cl. C08d *304, 306;* **C08f** *19/08*

U.S. Cl. 260—94.3 **21 Claims**

1. In a process for preparing gel-free coupled polymers wherein at least one polymerizable monomer is polymerized with a multilithium initiator and wherein a polyfunctional coupling agent containing at least three reactive sites capable of reacting with a lithium-carbon bond in a polymer is added in an effective amount to the polymerization reaction after initiation of said polymerization of said monomer with said multilithium initiator and prior to quenching of said polymerization reaction, thereby coupling said polymer, and wherein said polymerizable monomer is at least one conjugated diene, at least one monovinyl-substituted aromatic compound, or both, the improvement which comprises the addition to the polymerization reaction, after charging of said polymerizable monomer and said multilithium initiator, of a Group IIA metal halide or hydrocarbylmetal halide modifier wherein the Group IIA metal thereof is magnesium, calcium, strontium, or barium, and wherein said modifier is employed in a range of about 1.25 to 10 millimoles of said modifier per equivalent of lithium in said multilithium initiator;

wherein said multilithium initiator is a lithium metal adduct of a conjugated diene, a dilithium adduct of a fused ring aromatic hydrocarbon, or is represented by $R'Li_x$ wherein R' is a polyvalent hydrocarbyl radical with a valence equal to the value of x.

3,879,367

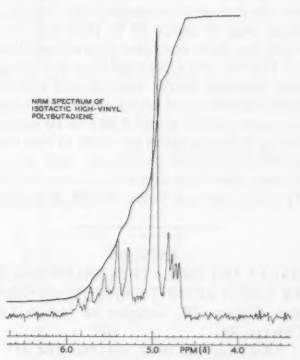
PRODUCTION OF CRYSTALLINE, HIGH-VINYL POLYBUTADIENE

Adel Farhan Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 19, 1973, Ser. No. 417,175

Int. Cl. C08d *1/4*

U.S. Cl. 260—94.3 **3 Claims**



1. In the method of producing polybutadiene of high vinyl content and a high degree of crystallinity by treating butadiene, -1,3 with a catalyst in solution in an aromatic solvent, the improvement in which the catalyst is a mixture of (1) 1 to 10 mM. of $AlR_1R_2R_3$ in which R_1 is selected from the group consisting of alkyl, arylalkyl, alkylaryl groups and hydrogen and R_2 and R_3 are selected from the class consisting of alkyl, arylalkyl and alkylaryl groups, and phenyl and napthyl groups and methyl derivatives thereof; each alkyl group containing 2

to 8 carbon atoms and (2) 0.1 to 5 mM. of a compound of the class consisting of tungsten oxychloride and tungsten dioxychloride, per 100 grams of butadiene -1,3.

3,879,368

CATALYST MODIFIED WITH CERTAIN STRONG REDUCING AGENTS AND SILANE COMPOUNDS AND USE IN POLYMERIZATION OF OLEFINS

Robert N. Johnson, Basking Ridge, N.J., assignor to Union Carbide Corporation, New York, N.Y.

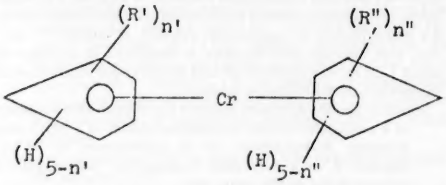
Continuation-in-part of Ser. No. 125,766, March 18, 1971, abandoned. This application June 25, 1973, Ser. No. 373,288. The portion of the term of this patent subsequent to Aug. 29, 1989 has been disclaimed.

Int. Cl. C08f *1/42, 3/06;* **B01j** *11/84*

U.S. Cl. 260—94.9 C **49 Claims**

1. In a process for polymerizing a monomer charge comprising at least one alpha olefin by contacting it with a catalyst comprising

at least one bis(cyclopentadienyl)chromium[II] compound having the structure



wherein R′ and R″ are the same or different C_1 to C_{20}, inclusive, hydrocarbon radicals and *n′* and *n″* are the same or different integers of 0 to 5, inclusive, and

0.1 to 50 moles, per mole of said bis(cyclopentadienyl)-chromium[II] compound, of at least one silane compound selected from the group consisting of compounds having the structures

$$H_3Si—SiH_2—_mH \text{ and } R_{4-n}SiH_n$$

wherein *m* is an integer from 0 to 3 inclusive, *n* is an integer from 0 to 3 inclusive, and R is a hydrocarbon group containing from 1 to about 10 carbon atoms,

supported on activated inorganic oxide support which has a surface area of about 50 to 1000 square meters per gram and has been activated at a temperature of about 150° to 1000°C. and is selected from the group consisting of silica, alumina, thoria, zirconia and mixtures thereof, the improvement which comprises adding to said catalyst, prior to said contact, about **0.001** to **10** moles of at least one strong reducing agent per mole of said bis(cyclopentadienyl)chromium[II] compound, said strong reducing agent being other than said bis(cyclopentadienyl)chromium[II] compound and being devoid of halogen atoms.

3,879,369

ANTI-COAGULANT ISOLATION FROM MALAYAN PIT VIPER USING AFFINITY CHROMATOGRAPHY

Chris Nolan, Gurnee, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 12, 1972, Ser. No. 254,337

Int. Cl. A61r *17/00*

U.S. Cl. 260—112 R **5 Claims**

1. The process of isolating the thrombin-like acting component from the venom of the viper *Agkistrodon rhodostoma* consisting essentially in preparing a clear solution of the native venom in a 0.25 molar aqueous sodium chloride solution buffered to a pH of 7.5–8.3, placing said solution on a columnar bed packed with agmatine-coupled agarose beads, washing the column with a 0.25 molar aqueous solution of sodium chloride buffered to a pH of 7.5–8.3 until the amount of material absorbing at 280 nm is reduced to 0.04 or less, and eluting the active thrombin-like material from said column with an aqueous solution of 0.1–0.25 molar guanidine hydrochloride buffered to a pH of 7.5–8.3.

3,879,370

FISH PRODUCT PREPARED BY DECOLORIZING FISH WITH ALKALINE HYDROPEROXIDE AND THEN DEODORIZING BY ISOPROPANOL EXTRACTION

Roland Paul Carpenter, Aberdeen; George Main, Portlethen, and Anthony Hubert Sutton, Stonehaven, all of Scotland, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 2, 1972, Ser. No. 303,175

Claims priority, application United Kingdom, Nov. 10, 1971, 52153/71

Int. Cl. A23j *1/04*

U.S. Cl. 260—112 R **6 Claims**

1. The process for isolating protein from fish, which comprises the steps of:

i. removing bone from raw fish by a mechanical operation to provide a substantially bone-free raw fish having a protein efficiency ratio equivalent to that of the raw fish starting material,

ii. thereafter decolorizing the bone-free raw fish at a pH value of from mildly alkaline to about 9.5 by mixing it with an alkali and with hydrogen peroxide at a temperature of from about 40° to about **60°C.**

iii. thereafter deodorizing the decolorized bone-free fish by extraction with isopropanol to provide a bone-free essentially white fish protein isolate, and

iv. subsequently drying the isolate.

3,879,371

ISOLATION OF VASOACTIVE INTESTINAL PEPTIDE

Sami I. Said, 5323 Harry Hines Blvd., Dallas, Tex. 75235, and Viktor Mutt, Medicinska Nobelinstitutet, Karolinski Institute, Stockholm, Sweden

Filed Sept. 17, 1971, Ser. No. 181,444

Int. Cl. C07c *103/52;* **C07g** *7/00;* **A61k** *27/00*

U.S. Cl. 260—112.5 **6 Claims**

1. A method of extracting and isolating VIP, a new biologically active polypeptide from the intestines of mammals comprising:

extracting crude VIP and secretin from said intestines, subjecting said crude VIP and secretin to a first ion-exchange chromatography, collecting fractions containing crude VIP after all the secretin has been removed,

subjecting said crude VIP further to gel chromatography, collecting fractions having approximately the greatest optical density measured at 280 mμ containing further purified VIP, subjecting the so purified VIP to a second ion-exchange chromatography and collecting fractions after the optical density measured at 280 mμ of successive fractions falls below approximately one-fourth of the peak value, and thereafter, subjecting the further purified VIP to countercurrent distribution separation and collecting purified VIP at approximately those fractions having the first full peak value of optical density measured at 215 mμ.

3,879,372

PREPARATION OF ASPARTYL DIPEPTIDE-ALKYLESTERS USING AQUEOUS SOLVENT

Wilhelmus H. J. Boesten, Sittard, Netherlands, assignor to Stamicarbon, B.V., Heerlen, Netherlands

Filed Nov. 15, 1972, Ser. No. 306,524

Claims priority, application Netherlands, Nov. 19, 1971, 7115944

Int. Cl. C07c *103/52;* **A23l** *1/26*

U.S. Cl. 260—112.5 **16 Claims**

1. In a process for preparing aspartyl α-amino acid C_1–C_5 alkyl esters by reacting in an inert solvent reaction medium an N-protected aspartic acid anhydride with an L-α-amino acid

C_1–C_5 alkyl ester, said L-α-amino acid selected from the group consisting of phenylalanine, tyrosine, methoxytyrosine, phenylglycine, hexahydrophenylalanine, hexahydropphenylglycine, aspartic acid and glutamic acid, and thereafter removing the N-protective group from the reaction product to produce the aspartyl amino acid lower alkyl ester having a peptide linkage, the improvement comprising using a solvent reaction medium consisting essentially of water, and conducting said reaction at a temperature of about −10° to about +50°C, and at a pH of about 4 to about 12.

3,879,373

CONCENTRATION AND ISOLATION OF PENTOSANS FROM WHEAT BRAN

Oliver B. Gerrish, Sr., and Ganta V. Rao, both of Hutchinson, Kans., assignors to Far-Mar-Co., Inc., Hutchison, Kans.

Filed Oct. 5, 1972, Ser. No. 295,192
Int. Cl. C13k *9/00*
U.S. Cl. 260—209 R **19 Claims**

1. A method of isolating pentosan from wheat bran comprising the steps of:

a. immersing the bran in water having a temperature in the range from about 80° to 100° C. and wherein the proportion by weight of bran to water is not less than 1:4 to extract water soluble matter from the bran;
b. delignifying the bran;
c. combining the delignified bran with sufficient aqueous alkali selected from the group consisting of sodium hydroxide potassium hydroxide, sodium carbonate, calcium hydroxide and mixtures thereof to form a bran-alkali solution having a pH in the range from 9 to 14;
d. freezing the bran-alkali solution;
e. thawing the solution to form an alkali fraction and a solid fraction;
f. separating the pentosan containing alkali fraction from the solid fraction; and
g. separating the pentosans from the alkali fraction.

3,879,374

COMPLEXES OF NICKEL-PIMARICIN

Adorjan Aszalos, Princeton, and John Vandeputte, Milltown, both of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,492
Int. Cl. C07c *47/18*; **C07g** *11/00*
U.S. Cl. 260—210 AB **1 Claim**

1. The complex of the formula nickel-pimaricin.

3,879,375

PROCESS FOR THE PREPARATION OF GARAMINE AND DERIVATIVES THEREOF

Peter J. L. Daniels, Cedar Grove, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Filed June 26, 1973, Ser. No. 373,693
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 R **14 Claims**

1. The process for preparing a garamine derivative having amino-protecting groups selected from the group consisting of lower alkanoyl, aroyl and aralkanoyl, which comprises treating a pseudotrisaccharide having a garamine moiety 4-O-glycosidically linked to another pyranoside sugar which possesses an amino function and vicinal hydroxyl groups, said pseudotrisaccharide having amino-protecting groups selected from the group consisting of lower alkanoyl, aroyl and aralkanoyl, with a glycol cleaving reagent selected from the group consisting of a periodate salt and a lead (IV) salt; and treating the seco-dialdehyde intermediate with a hydrazine and a lower, alkanoic acid in water, said hydrazine being a phenylhydrazine.

3,879,376

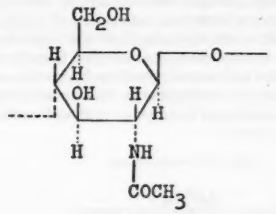
CHITOSAN DERIVATIVE, METHOD OF MAKING THE SAME AND COSMETIC COMPOSITION CONTAINING THE SAME

Guy Vanlerberghe, Montjay-la-Tour, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

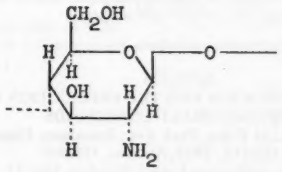
Filed May 8, 1972, Ser. No. 251,263
Claims priority, application Luxembourg, May 10, 1971, 63142; Apr. 18, 1972, 65186
Int. Cl. C07c *95/04*
U.S. Cl. 260—211 R **16 Claims**

1. Chitosan derivative consisting of randomly distributed patterns of the formulae:

(A)

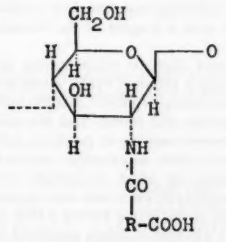


(B)

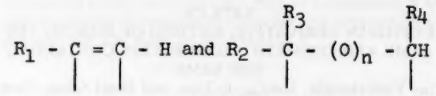


and

(C)



the proportions of these three patterns being, respectively, 5 to 30 percent for A, 5 to 40 percent for B and 30 to 90 percent for C, R representing a member selected from the group consisting of



wherein R_1 represents a member selected from the group consisting of hydrogen and methyl, n is equal to (a) O, in which case R_2, R_3 and R_4, each independently, represent a member selected from the group consisting of hydrogen; methyl; hydroxy; acetoxy; amino; monoalkylamino or dialkylamino, wherein the alkyl moiety of each has 1 to 12 carbon atoms and wherein each is optionally interrupted by one or more nitrogen atoms or substituted by one or more amino, hydroxyl, mercapto, carboxyl, alkylthio wherein the alkyl moiety has 1 to 8 carbon atoms and sulfonic groups; alkylthio wherein the alkyl moiety has 1 to 4 carbon atoms and carries an amino residue; and a residue of glutathion, at least one of R_2, R_3 and R_4 being hydrogen and radicals R_2 and R_3 being able to form together a methylene radical, and (b) 1, in which case R_2, R_3 and R_4 each represent hydrogen; and the salts formed by this derivative with a base selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonia, lime, magnesia and alkanolamine and an acid selected from the group consisting of hydrochloric, phosphoric, acetic, lactic, tartaric and citric.

3,879,377

PURIFICATION OF CHITIN

Paul Rolland Austin, Wilmington, Del., assignor to The University of Delaware, Newark, Del.

Filed Nov. 23, 1973, Ser. No. 418,287

Int. Cl. C07c *97/04*

U.S. Cl. 260—211 R **7 Claims**

1. A solution of chitin in a mixture of a 1,2-chloroalcohol with an aqueous solution of a strong inorganic acid or with an organic acid having one or two carbon atoms.

3,879,378

CHEMICAL PROCESS FOR THE PRODUCTION OF HYDROXOCOBALTICORRINOIDS

Leonard Mervyn, 34 Roker Park Ave., Ickenham, England

Filed Dec. 15, 1972, Ser. No. 315,566

Claims priority, application United Kingdom, Dec. 17, 1971, 58740/71

Int. Cl. C07d *55/62*

U.S. Cl. 260—211.7 **10 Claims**

1. A process for the preparation of a hydroxocobalticorrinoid consisting essentially of:

a. reacting under non-oxidising and light-free conditions a cobalt (I) corrinoid with a reagent of the formula RX, wherein:

R represents a straight aliphatic chain having up to 4 carbon atoms having a terminal cyclic group selected from the group consisting of mono- and bi-cyclic aryl and cyclohexyl groups and mono- and bi-cyclic aryl and cyclohexyl groups carrying in positions not adjacent to the aliphatic chain substituents selected from the group consisting of alkyl, acylamido, acyloxy, ether, carboxyl, carboxylic ester and nitro groups and halogen atoms; said cyclic group having a bulk at least as great as phenyl whereby a cobalt corrinoid derivative is formed which is stable enough to be handled in a solution and which is sufficiently unstable to be readily oxidised to hydroxo analogues without serious degradation of the molecule before oxidation is complete, and

X represents a radical derived from the anionic moiety of a strong organic or inorganic acid, or where R possess an alk-1-enyl group having 2–4 carbon atoms having a terminal cyclic group as defined above, a hydrogen atom; and

b. subsequently reacting the intermediate so formed with molecular oxygen.

3,879,379

3-AMINO-CARDENOLIDES AND PROCESS FOR THEIR MANUFACTURE

Ulrich Stache, Hofheim, Taunus; Werner Fritsch, Neuenhain, Taunus; Werner Haede, Hofheim, Taunus; Kurt Radscheit, Kelkheim, Taunus, and Ernst Lindner, Frankfurt, Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

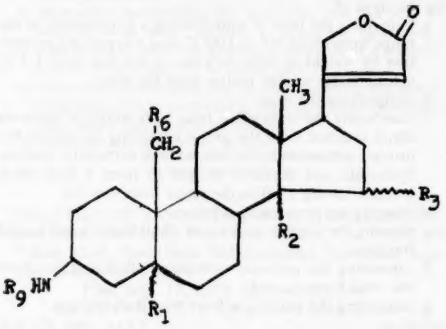
Filed Mar. 17, 1971, Ser. No. 125,425

Claims priority, application Germany, Mar. 19, 1970, 2013032

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.57 **12 Claims**

1. A 3-amino-cardenolide of the formula



wherein R_1 is hydrogen or β-hydroxy; R_2, taken alone, is hydrogen or hydroxy; R_3, taken alone, is hydrogen; R_2 and R_3, taken together, represent a C—C bond; R_6 is hydrogen or hydroxy; and R_9 is hydrogen, alkanoyl, or benzoyl.

3,879,380

PROCESS FOR RECOVERY OF LACTAM

Abraham H. De Rooij, Geleen, and Reijer Goettsch, Beek, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Dec. 11, 1972, Ser. No. 313,638

Claims priority, application Netherlands, Dec. 11, 1971, 7117035

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A **7 Claims**

1. A process for the recovery of caprolactam from a mixture of caprolactam and sulphuric acid, said process comprising neutralizing said sulphuric acid in said mixture to ammonium hydrogen sulfate at a temperature of at least about 110°C in the presence of an amount of at least one organic solvent for said lactam sufficient to dissolve said lactam, said solvent being inert to sulphuric acid at a temperature of 150°C, with at least one neutralizing agent selected from the group consisting of ammonia, ammonium sulfate, and triammonium hydrogen sulfate, to produce a melt of ammonium hydrogen sulfate, wherein the amount of said neutralizing agent is such that the molar ratio

$$[(NH_4)_2SO_4 / (NH_4)_2SO_4 + H_2SO_4]$$

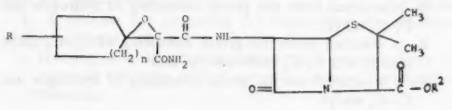
is between 0.4:1 and 0.55:1 and a solution of lactam in said organic solvent, said solution also containing free sulphuric acid, and recovering the lactam from said solution.

3,879,381
7-(2-CARBAMOY L-1-OXASPIRO(2,X)ALKANE-CARBOXAMIDO) PENICILLANIC ACIDS

John H. Sellstedt, Montgomery, and Daniel M. Teller, Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,413
Int. Cl. C07d 99/16, 99/24
U.S. Cl. 260—239.1 5 Claims

1. A compound represented by the following formula:



Wherein:

R is selected from the class consisting of hydrogen and (lower) alkyl; R^2 is selected from the class consisting of hydrogen, a metallic cation, a non-metallic cation formed from a tri(lower) alkylamine or di(lower)alkylamine, a heterocyclic quaternary ammonium group of aromatic character containing nitrogen as the only heterocyclic atom selected from the class consisting of pyridinium, quinolinium and picolinium, an N-(lower)alkyl piperidine and *n* is a whole number from 1 through 4.

3,879,382
PROCESS FOR THE RECOVERY OF D- OR L-α-AMINO-ε-CAPROLACTAM HYDROCHLORIDE OF ENHANCED OPTICAL PURITY FROM MIXTURES OF D- AND L-α-AMINO-ε-CAPROLACTAM HYDROCHLORIDE

Hideo Watase, Hino; Yasuhisa Ohno, Hachioji; Tadayoshi Nakamura; Tadashi Okada, and Toru Takeshita; Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 22, 1972, Ser. No. 282,667
Claims priority, application Japan, Aug. 27, 1971, 46-65726; Jan. 19, 1972, 47-7525; Jan. 22, 1972, 47-8537; Feb. 14, 1972, 47-15474
Int. Cl. C07d 41/06
U.S. Cl. 260—239.3 R 9 Claims

1. A process for the recovery of D- or L-α-amino-ε-caprolactam hydrochloride of enhanced optical purity from a mixture of D- and L-α-amino-ε-caprolactam hydrochloride dissolved in a polar solvent selected from the group consisting of water, mono- to tri-hydric aliphatic alcohols having less than 7 carbon atoms; aliphatic ketones having less than 7 carbon atoms; aliphatic carboxylic acids having less than 11 carbon atoms and the lower alkyl esters thereof; N-unsubstituted and N-substituted amides having less than 7 carbon atoms; lower alkyl sulfoxides having less than 5 carbon atoms; cyclic ethers having less than 5 carbon atoms; aliphatic nitriles having less than 5 carbon atoms; and mixtures thereof, the said solution containing (1), dissolved therein, at least one of the said D-α-amino-ε-caprolactam hydrochloride and L-α-amino-ε-caprolactam hydrochloride in the supersaturated state and (2), in addition to the said D- and L-α-amino-ε-caprolactam hydrochloride, an additive selected from at least one of the group consisting essentially of

A. a basic substance having a $_pK_b$ value of not greater than 5 as measured at 25°C. in water or a substance having a basicity equivalent thereto, said substance being selected from the group consisting of aliphatic amines having not more than 12 carbon atoms; aryl lower alkyl amines; alicyclic amines having not more than 6 carbom atoms in the ring; pyrrolidine; piperidine; 2-methyl-piperidine, piperazine; α-amino-ε-caprolactam; α-amino-laurylolactam; melam; melem; alkali metal hydroxides; alkaline earth metal hydroxides; tetra-lower alkyl ammonium hydroxides; alkali metal lower alkoxides; alkali metal salts of monobasic lower aliphatic acids, alkali metal salt of benzoic acid; alkali metal salt of salicyclic acid; alkali metal salt of dibasic aliphatic acids having 4–6 carbon atoms; ammonia and guanidine, and

B. a salt of a mixture of D- and L-α-amino-ε-caprolactam having a solubility in the said polar solvent which is greater than the solubility of D- and L-α-amino-ε-caprolactam hydrochloride in the said polar solvent, said salt being selected from the group consisting of salts of a monobasic aliphatic carboxylic acid having 1–4 carbon atoms; a monobasic aryl carboxylic acid; a dibasic lower aliphatic acid having 2–6 carbon atoms; a hydroxylated dibasic aliphatic acid having 2–6 carbon atoms; and an amino acid having not more than 4 carbon atoms, with D-NH_2CL or L-NH_2Cl, or a mixture thereof;

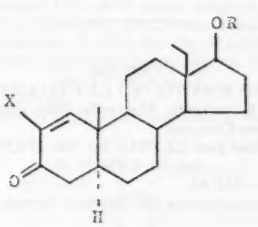
in an amount of at least 0.2 mole per mole of the total amounts of D- and L-α-amino-ε-caprolactam hydrochloride and within such a range that the additive can be dissolved in the polar solvent and that at least one optical isomer of D-NH_2Cl.HCl and L-NH_2Cl.HCl is dissolved in the polar solvent and the supersaturated dissolution state of the one optical isomer can be maintained, crystallizing the one optical isomer dissolved in said solution at the supersaturated state and recovering the crystallized product.

3,879,383
2-HALOGEN-18-METHYL-1-ANDROSTENE

Hans-Detlef Berndt; Hermann Steinbeck, and Rudolf Wiechert, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed Aug. 26, 1969, Ser. No. 853,216
Claims priority, application Germany, Sept. 4, 1969, 1793344
Int. Cl.[2] C07C 173/00
U.S. Cl. 260—239.55 5 Claims

1. A 2-halogeno-18-methyl-1-androstene having the formula I



(I)

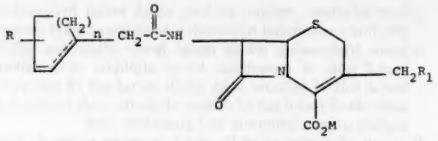
wherein R is hydrogen or an aliphatic acid group containing up to 15 carbon atoms and X is chlorine.

3,879,384
7-[2-(1-AND 2 CYCLOPENTEN-1-YL)ACETAMIDO]CEPHALOSPORANIC ACIDS

Daniel M. Teller, Devon, and John H. Sellstedt, King of Prussia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,746
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 7 Claims

1. Compounds represented by the formula:



Wherein R is hydrogen or lower alkyl, n is one, R^1 is selected from the group consisting of hydrogen, acetoxy and pyridinium and M is selected from the group consisting of hydrogen and a pharmaceutically acceptable cation.

3,879,385

3-(ALPHA-TRIFLUOROMETHYLARYLACETAMIDO)-1,4-CYCLO(1,-CARBOXYL)ALKYLENETHIO)-AZETIDIN-2-ONE DERIVATIVES

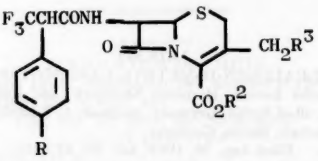
Daniel M. Teller, Devon; John H. Sellstedt, and Charles J. Guinosso, both of King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 16, 1973, Ser. No. 360,857

Int. Cl. C07d *99/24, 99/16*

U.S. Cl. 260—243 C **3 Claims**

1. A compound of the formula:



in which

R is —H or —OH;

R^2 is —H or an alkali metal cation; and

R^3 is —H, (lower)alkanoyloxy or N-pyridinium.

3,879,386

AMINO SUBSTITUTED 1,2,4-TRIAZINONES

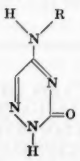
Lawrence S. Wittenbrook, Marysville, Ohio, assignor to O. M. Scott & Sons Company

Filed June 22, 1973, Ser. No. 372,599

Int. Cl. C07d *55/10*

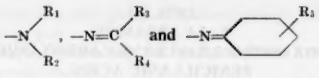
U.S. Cl. 260—248 AS **10 Claims**

1. A compound having the structural formula



wherein

R is selected from the group consisting of ethyl, methyl, furfuryl



in which

R_1 is selected from the group consisting of hydrogen and methyl;

R_2 is selected from the group consisting of phenyl, acetyl and propionyl when R_1 is hydrogen and R_2 is methyl when R_1 is methyl;

R_3 is selected from the group consisting of hydrogen and C_1–C_6 alkyl;

R_4 is selected from the group consisting of C_1–C_6 alkyl, phenyl and C_1–C_3 carboalkoxy; and

R_5 is selected from the group consisting of hydrogen and C_1–C_6 alklyl.

3,879,387

PROCESS FOR THE PREPARATION OF PYRIDYL ISOCYANURATES

Richard Garth Pews; Lennon H. McKendry, both of Midland, Mich., and Ralph M. Rodia, Salem, Oreg., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 285,503, Aug. 31, 1972, Pat. No. 3,804,844, and a continuation-in-part of Ser. No. 94,622, Dec. 2, 1970. This application Nov. 1, 1973, Ser. No. 411,937

Int. Cl. C07d *55/38*

U.S. Cl. 260—248 NS **5 Claims**

1. A process for the preparation of a pyridine isocyanurate compound which comprises reacting a pyridine compound, ring-substituted with at least one displaceable substituent selected from the group consisting of chloro, bromo, fluoro, iodo, $-N_2^+$, $-OSO_2R$, $-SO_2R$, and $-SR_2^+$, wherein each R independently represents hydrogen, phenyl or a loweralkyl radical of from one to about 4 carbon atoms, inclusive, with an alkali metal cyanate in the presence of a high dielectric-aprotic solvent.

3,879,388

2-GUANADINO-4,6-BIS-AMINO-S-TRIAZINES

Denis Varsanyi, Arlesheim, and Willy Roth, Strengelbach, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

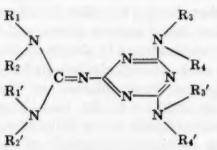
Division of Ser. No. 672,733, Oct. 4, 1967, abandoned. This application Sept. 16, 1971, Ser. No. 181,265

Claims priority, application Switzerland, Oct. 27, 1966, 15588/66

Int. Cl. C07d *55/22*

U.S. Cl. 260—249.6 **4 Claims**

1. A compound of the formula



wherein

each of R_1, R_1', R_3 and R_3' represents hydrogen, 2-hydroxyethyl 3-hydroxypropyl or alkyl of from 1 to 4 carbon atoms,

each of R_2, R_2', R_4 and R_4' represents alkyl of from 1 to 18 carbon atoms, allyl, 2-hydroxyethyl or 3-hydroxypropyl,

at least one of R_2, R_2', R_4 and R_4' representing a long chain aliphatic radical of from 10 to 18 carbon atoms.

3,879,389
PROCESS FOR THE PREPARATION OF 2,4,6-TRIS(ALKANOL-SUBSTITUTED AMINO)-S-TRIAZINES

Peter T. Kan, Plymouth, and Moses Cenker, Trenton, both of Mich., assignors to Basf Wyandotte Corporation, Wayne, Mich.

Continuation-in-part of Ser. No. 215,675, Jan. 5, 1972, abandoned. This application July 5, 1973, Ser. No. 376,892
Int. Cl. C07d *55/22*
U.S. Cl. 260—249.6 **6 Claims**

1. A process for preparing 2,4,6-tris-(alkanolsubstitutde amino)-s-triazine which comprises:

a. reacting stoichiometric quantities of an aqueous slurry of cyanuric chloride and a secondary amine having the formula:

wherein R is an alkanol group having from 2 to 4 carbon atoms and R' is selected from the group consisting of alkyl having from 1 to 4 carbon atoms and alkanol having from 2 to 4 carbon atoms, at a temperature of about 0°C. to about 5°C. for a period of about 1 to 2 hours, the addition being done in the presence of (1) from 1 part to 4 parts by weight per part of cyanuric chloride of a coupling agent selected from the group consisting of acetone, methyl ethyl ketone, methyl-n-propyl ketone, ethyl ketone, and methyl isopropyl ketone, and (2) a compound selected from the group consisting of a sodium or lithium borate, phosphate and bicarbonate, and a magnesium, barium or strontium oxide and hydroxide;

b. heating the product of (a) at a temperature ranging from about 20°C. to about 30°C. for a period of about 1 hour to 4 hours;

c. heating the product of (b) for a period of about 1 hour to 4 hours at a temperature of about 95°C. to about 115°C.; and

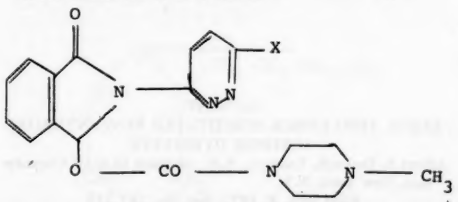
d. therefter recovering the 2,4,6-tris-(alkanolsubstituted amino)-s-triazine.

3,879,390
2-PYRIDAZINYLISOINDOLIN-1-ONE DERIVATIVES

Claude Cotrel, Choisy-Le-Roi; Claude Jeanmart, Brunoy, and Mayer Naoum Messer, Bievres, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 2, 1972, Ser. No. 249,509
Claims priority, application France, May 4, 1971, 71.16074; Feb. 23, 1972, 72.06108
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 A **8 Claims**

1. An isoindoline of the formula:



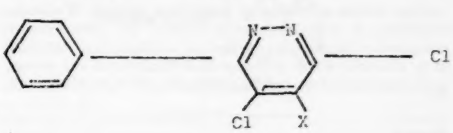
wherein X is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or alkylthio of 1 to 4 carbon atoms; and non-toxic acid addition salts thereof.

3,879,391
PHENYLPYRIDAZINES AND THE PREPARATION THEREOF

Alfred Diskus, Linz/Donau; Rupert Schönbeck, Leonding near Linz/Donau; Engelbert Kloimstein, Eferding, and Hubert Mayr, Leonding near Linz/Donau, all of Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz-/Donau, Austria

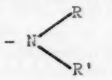
Filed May 21, 1973, Ser. No. 362,505
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 A **11 Claims**

1. A phenylpyridazine having the formula:



in which

X is selected from the group consisting of



and —O—R'', wherein

R and R' which have the same or a different meaning are selected from the group consisting of hydrogen and alkyl having 1, 2 or 3 carbon atoms and

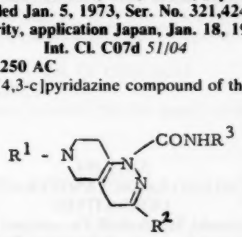
R'' selected from the group consisting of hydrogen and alkyl having 1 to 6 carbon atoms.

3,879,392
PYRIDO(4,3-C)PYRIDAZINE COMPOUNDS

Michio Nakanishi, Oita; Katsuo Arimura, Fukuoka, and Tatsumi Tsumagari, Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Jan. 5, 1973, Ser. No. 321,424
Claims priority, application Japan, Jan. 18, 1972, 47-7378
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 AC **10 Claims**

1. A pyrido[4,3-c]pyridazine compound of the formula:



wherein R^1 is hydrogen, methyl, butyl, allyl, 2-propynyl, benzyl, phenethyl, p-chlorobenzyl, p-methoxybenzyl, 3,4-dimethoxybenzyl,

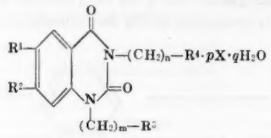
3,4,5-trimethoxybenzyl, p-nitrobenzyl, phenacyl, 3-p-fluorobenzoylpropyl, acetyl, benzoyl, 3,4,5-trimethoxybenzoyl, ethoxycarbonyl, benzyloxycarbonyl, 2-pyridylmethyl, 2-diethylaminoethyl or 1,4-benzodioxan-2-yl-methyl; R^2 is methyl, phenyl, m-chlorophenyl, p-chlorophenyl, 3,4-dichlorophenyl, p-bromophenyl, o-fluorophenyl, p-fluorophenyl, p-tolyl, m-methoxyphenyl, p-methoxyphenyl, m-trifluoromethylphenyl, m-nitrophenyl, p-nitrophenyl, 3-chloro-4-methoxyphenyl, p-biphenylyl, 4-pyridyl or 2-thienyl; and R^3 is hydrogen or phenyl; and pharmaceutically acceptable acid addition salts thereof.

3,879,393
DERIVATIVES OF 1,3-DISUBSTITUTED 2,4(1H,3H)-QUINAZOLINEDIONES

Herbert John Havera, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed June 18, 1973, Ser. No. 371,277
Int. Cl. C07d 51/48
U.S. Cl. 260—256.4 Q 17 Claims

1. A compound having the formula



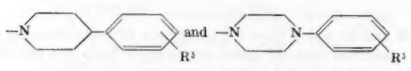
wherein:

R^1 is selected from the group consisting of hydrogen, chloro, nitro, methoxy, and acetamido;

R^2 is selected from the group consisting of hydrogen and methoxy with the proviso that R^2 is methoxy only when R^1 is methoxy;

R^3 is selected from the group consisting of piperidyl, dimethylamino, and diethylamino;

R^4 is selected from the group consisting of



in which R^5 is selected from the group consisting of hydrogen, chloro, and methyl;

m is an integer having a value of from 2 to 3;

n is an integer having a value of from 2 to 7;

X is a pharmacologically acceptable, non-toxic acid; and

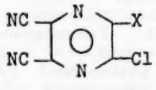
p and q are 0 or integers having a value of from 1 to 2.

3,879,394
2,3-DICHLORO-5,6-DICYANOPYRAZINE AND DERIVATIVES

Dennis Scott Donald, Mendenhall, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 25, 1973, Ser. No. 400,505
Int. Cl. C07d 51/76
U.S. Cl. 260—250 BN 3 Claims

1. A compound of the formula



wherein

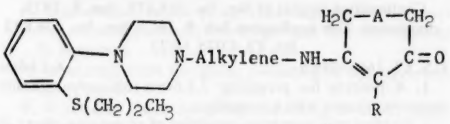
X is NH_2, NHR or NRR′ in which R and R′ individually are alkyl of 1–6 carbon atoms or alkenyl of 3 to 6 carbon atoms with the proviso that an unsaturated carbon of the alkenyl group is not directly attached to nitrogen.

3,879,395
3-(1-PIPERAZINYLALKYLAMINO)-2-CYCLOALKEN-1-NE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

Ivan C. Nordin, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Filed Oct. 23, 1973, Ser. No. 408,556
Int. Cl. C07d 51/70
U.S. Cl. 260—268 PH 7 Claims

1. A compound of the formula



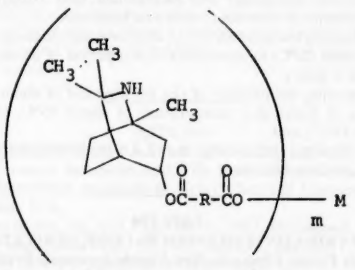
wherein A is a single bond, methylene or isopropylidene, R is hydrogen or methyl and Alkylene is $-CH_2CH_2CH_2-$ or $-CH_2(CH_2)_2CH_2-$ or pharmaceutically acceptable acid addition salts thereof.

3,879,396
BICYCLIC HINDERED AMINO ACIDS AND METAL SALTS THEREOF

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,236
Int. Cl. C07d 39/00
U.S. Cl. 260—270 R 5 Claims

1. A compound of the formula



wherein

R is straight- or branched-chain alkylene having one to 20 carbon atoms,

M is hydrogen or a metal selected from the group consisting of barium, nickel, manganese, calcium, zinc, iron, sodium, cobalt, tin, and dialkyl tin, and

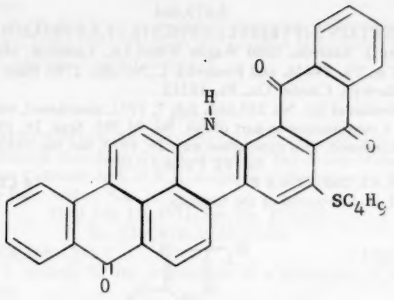
m has a value of from 1 to 4, the value of m being the same as the available valence of M.

3,879,397
ALKYL THIO ETHER-SUBSTITUTED BENZANTHRONE ACRIDINE DYESTUFFS

Albert S. Deutsch, Yonkers, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Sept. 8, 1972, Ser. No. 287,233
Int. Cl. C07d 37/30
U.S. Cl. 260—274 3 Claims

1. The compound having the formula



3,879,398

SALTS OF A MONOPHOSPHONIC ACID AND A MONOAMINE

Norman Vaughan Ellerton, Harrow; William Frederick Paradise, Windsor, and Peter Edgar Sandord, Chalfont St. Peter, all of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Division of Ser. No. 181,283, March 10, 1970, Pat. No. 3,725,399. This application Jan. 12, 1973, Ser. No. 323,214

Int. Cl. C07d *31/24, 31/26, 31/44, 31/46*

U.S. Cl. 260—290 HL 7 Claims

1. A salt of a monoamine selected from the group consisting of pyridine and pyridine substituted by a chlorine atom, a bromine atom, lower alkyl, formyl, acetyl, acetamide, cyano, aldoximino, and a phosphonic acid selected from the group consisting of methane phosphonic acid, ethane phosphonic acid, trichloromethane phosphonic acid, iodomethane phosphonic acid, dichloromethane phosphonic acid and bromobenzene phosphonic acid.

3,879,399

PROCESS FOR THE MANUFACTURE OF PIPERIDINE DERIVATIVES

Helmut Zondler, Allschwil, Switzerland, and Wolfgang Pfleiderer, Constance, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

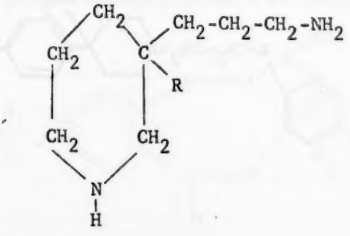
Continuation-in-part of Ser. No. 325,462, Jan. 22, 1973, abandoned, which is a continuation of Ser. No. 133,445, April 12, 1971, abandoned. This application Sept. 6, 1973, Ser. No. 394,893

Claims priority, application Switzerland, Apr. 13, 1970, 5452/70

Int. Cl. C07d *29/06*

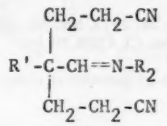
U.S. Cl. 260—293.52 7 Claims

1. A process for the manufacture of 3-(γ-aminopropyl)-piperidines of the formula



(I),

wherein R denotes an aliphatic hydrocarbon radical preferably containing 1 to 7 carbon atoms, characterised in that cyanoethylated aldimines of the general formula



(II),

wherein R′ denotes an aliphatic hydrocarbon radical preferably containing 1 to 7 carbon atoms and wherein R_2 denotes an aliphatic, cycloaliphatic, araliphatic or aromatic hydrocarbon radical, are catalytically hydrogenated at temperatures up to 200°C, with $H_2N—R_2$ being split off and cyclisation occurring.

3,879,400

1-LOWER ALKYL-(1-ADAMANTYLMETHYL)PIPERIDINES AND PROCESS FOR THEIR PREPARATION

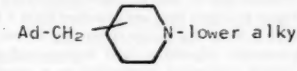
Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 16, 1973, Ser. No. 416,403

Int. Cl. C07d *29/10*

U.S. Cl. 260—293.56 8 Claims

1. A compound of the formula



in which Ad is an adamantyl radical attached at a bridgehead carbon.

3,879,401

PIPERIDINES

John Leheup Archibald, Windsor, and John Lambert Jackson, Henley-on-Thames, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

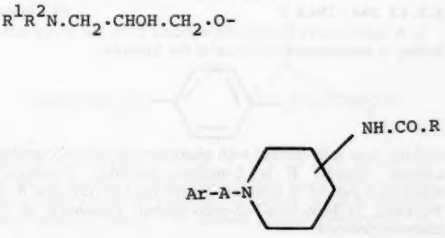
Filed Aug. 20, 1973, Ser. No. 390,150

Claims priority, application United Kingdom, Sept. 1, 1972, 40617/72

Int. Cl. C07d *29/28*

U.S. Cl. 260—293.64 11 Claims

1. A compound selected from the group consisting of bases of the formula:



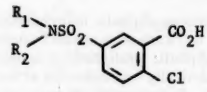
3,879,402

PROCESS FOR PREPARING 2-CHLORO-5-SULFAMOYLBENZOIC ACIDS

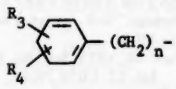
Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sept. 26, 1973, Ser. No. 400,704
Int. Cl. C07d *29/34*
U.S. Cl. 260—293.73 4 Claims

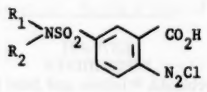
1. A process for the preparation of compounds of the formula:



wherein R_1 is selected from the group consisting of hydrogen and alkyl containing from 1 to 4 carbon atoms; R_2 is selected from the group consisting of alkyl containing from 1 to 4 carbon atoms and phenylalkylene of the formula



wherein n is an integer of 0 to 3 and R_3 and R_4 are each selected from the group consisting of hydrogen, methyl, chloro and bromo; and R_1 and R_2 when considered together with the nitrogen to which they are attached form a heterocyclic ring selected from the group consisting of morpholino, hexamethyleneimino, piperidino and mono- and dimethylpiperidino, which comprises contacting in a reaction-inert solvent a diazonium salt of the formula



with a metal chloride selected from the group consisting of CuCl, $CuCl_2$, $FeCl_2$, $FeCl_3$, $ZnCl_2$, $CoCl_2$, $AlCl_3$, $HgCl_2$, $NiCl_2$, $SnCl_4$, $CrCl_3$ and $SbCl_3$ at a reaction temperature of 60°-100° C.

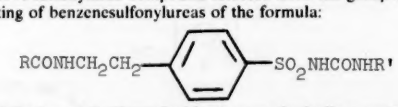
3,879,403

BENZENESULFONYLUREA DERIVATIVES

Donald E. Kuhla, Gales Ferry, and Reinhard Sarges, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,466
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 C 11 Claims

1. A sulfonylurea compound selected from the group consisting of benzenesulfonylureas of the formula:



and the base salts thereof with pharmacologically acceptable cations, wherein R is 2-methoxy-3-pyridyl, 5-chloro-2-methoxy-3-pyridyl or 5-bromo-2-methoxy-3-pyridyl, and R' is bicyclo[2.2.1]hept-5-en-2-yl-endo-methyl, cyclohexyl or 4-chlorocyclohexyl.

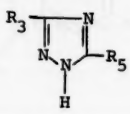
3,879,404

CERTAIN 5-(PYRIDYL)-3(PHENYL)-1,2,4-TRIAZOLES

John J. Baldwin, 1680 Wagon Wheel Ln., Lansdale, Montg. Co., Pa. 19446, and Frederick C. Novello, 2786 Blair Rd., Berwyn, Chester Co., Pa. 19312

Division of Ser. No. 269,685, July 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 75,785, Sept. 25, 1970, abandoned. This application Aug. 29, 1973, Ser. No. 392,842
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 F 6 Claims

1. A compound of the formula



and non-toxic salts thereof wherein

R_3 represents monochlorosulfamoylphenyl, dichlorosulfamoylphenyl; and

R_5 is pyridyl.

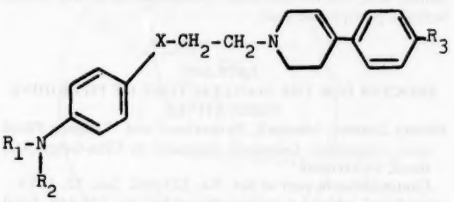
3,879,405

TETRAHYDROPYRIDINE DERIVATIVES

Albrecht Edenhofer, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 148,119, May 28, 1971, Pat. No. 3,758,483. This application May 21, 1973, Ser. No. 362,636
Claims priority, application Switzerland, June 19, 1970, 9318/70
Int. Cl. C07d *31/48*, *31/50*
U.S. Cl. 260—294.8 F 1 Claim

1. A process for the preparation of a compound of the formula



wherein

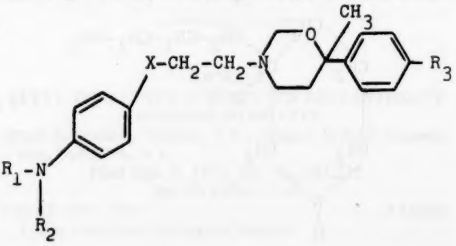
R_1 signifies hydrogen, lower alkyl, lower alkanoyl, lower alkylsulfonyl, C_3 to C_6 cycloalkyl or C_3 to C_6 cycloalkyl-lower alkyl;

R_2 signifies hydrogen, lower alkyl, C_3 to C_6 cycloalkyl or C_3 to C_6 cycloalkyl-lower alkyl;

R_3 signifies fluorine, chlorine or lower alkoxy;

X signifies an oxygen atom or a sulfur atom

consisting essentially of reacting a compound of the formula



wherein

R_1, R_2, R_3 and X are as described above with a mineral acid at a temperature of about 0°C to reflux temperature for a prolonged period of time.

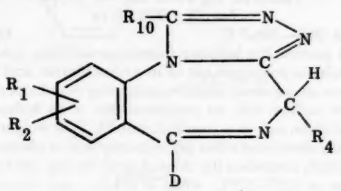
3,879,406

PREPARATION OF TRIAZOLOBENZODIAZEPINES

Leo Henryk Sternbach, Upper Montclair, and Armin Walser, West Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

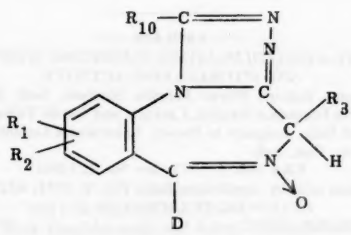
Filed July 13, 1972, Ser. No. 271,434
Int. Cl. C07d *31/24, 53/06*
U.S. Cl. 260—296 T **2 Claims**

1. A process for the preparation of a compound of the formula



I

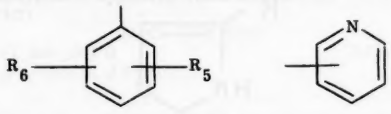
and



Ia

and pharmaceutically acceptable acid addition salts thereof wherein

D is selected from the group consisting of



R_1 and R_2 are each selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl;

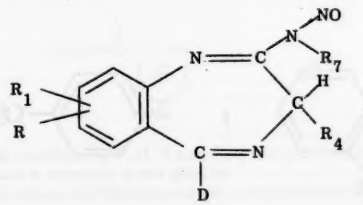
R_3 is selected from the group consisting of hydrogen and lower alkyl;

R_4 is selected from the group consisting of hydrogen and lower alkyl;

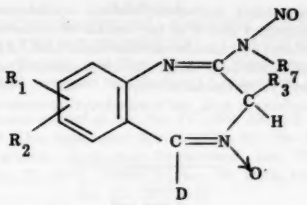
R_5 and R_6 are selected from the group consisting of hydrogen, trifluoromethyl and halogen and

R_{10} is selected from the group consisting of hydrogen and lower alkyl

which comprises treating a compound of the formula



;



wherein

R_1, R_2, R_3, R_4 and D are as above and

R_7 is selected from the group consisting of hydrogen and lower alkyl

with hydrazine in the presence of an inert organic solvent and at a temperature of from about 20°C. to about 60°C. and then treating the product so-obtained with a trilower alkyl-ortho-lower alkanoylate in the presence of an acid promotor and an inert organic solvent at a temperature of from about 30°C. to about the reflux temperature of the reaction mixture whereby a compound of the formula I and Ia above results.

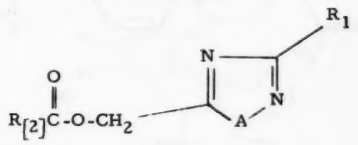
3,879,407

1,2,4-OXADIAZOLE AND THIADIAZOLE ESTERS AND COMPOSITIONS CONTAINING SAME

John D. Hagarty, Sturtevant, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

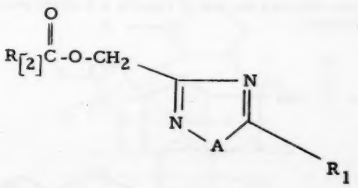
Filed Feb. 9, 1973, Ser. No. 331,164
Int. Cl. C07d *91/60, 85/52*
U.S. Cl. 260—302 D **11 Claims**

1. A compound of the formula



wherein A is oxygen or sulfur, R_1 is lower alkyl having 1–6 carbon atoms, benzyl, substituted benzyl wherein the substituent is nitro, halo or lower alkyl having 1–6 carbon atoms, lower alkenyl having 1–6 carbon atoms, furylmethyl, cyclopentylmethyl, cyclopentenylmethyl, cyclohexenylmethyl, or cyclohexylmethyl, and R is the residue of a carboxylic acid selected from (+)-trans-chrysanthemumic acid, (±)-cis, trans-chrysanthemumic acid, methylcyclopropanecarboxylic acid, tetramethylcyclopropanecarboxylic acid, dihalocyclopropanecarboxylic acid, and tetrahalocyclopropanecarboxylic acid.

7. A compound of the formula



wherein A is oxygen or sulfur, R_1 is lower alkyl having 1–6 carbon atoms, benzyl, substituted benzyl wherein the substituent is nitro, lower alkyl having 1–6 carbon atoms or halogen, lower alkenyl having 1–6 carbon atoms, furylmethyl, cy-

clopentenylmethyl, cyclopentylmethyl, cyclohexenylmethyl, cyclohexylmethyl and R is the residue of a carboxylic acid selected from (+)-trans-chrysanthemumic acid, (±)-cis, trans-chrysanthemumic acid, dimethylcyclopropanecarboxylic acid, tetramethylcyclopropanecarboxylic acid, dihalocyclopropanecarboxylic acid, and tetrahalocyclopropanecarboxylic acid.

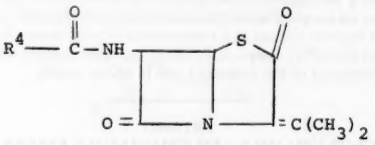
3,879,408

PROCESS FOR PREPARING ANHYDROPENICILLINS

John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

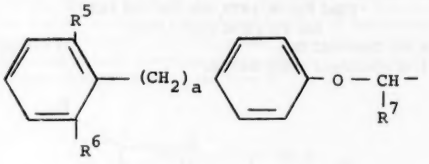
Filed Sept. 8, 1972, Ser. No. 287,394
Int. Cl. C07d *99/16*
U.S. Cl. 260—306.7 R **8 Claims**

1. A process for preparing an anhydropenicillin of the formula:



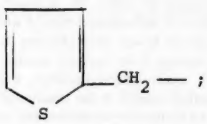
wherein:

R^4 is selected from the group consisting of:



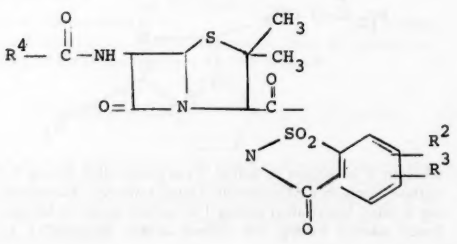
(a) (b)

and



(c)

R^5 and R^6 are selected from the group consisting of hydrogen and lower alkoxy; R^7 is selected from the group consisting of hydrogen, lower alkyl and phenyl; and a is 0 or 1; which process comprises the step of reacting a 2-amido penicillin of the formula:



wherein:

R^4 has the same meaning as earlier defined in this claim; and R^2 and R^3 are selected from the class consisting of hydrogen, lower alkyl, having from one to six carbon atoms, lower alkoxy, having from one to six carbon atoms and halogen; with a tertiary amine having a pka in the range of about 9 to about 13 at a temperature between about −40°C and about +25°C in the presence of an inert anhydrous organic solvent.

3,879,409

ISOLATION OF 6-AMINOPENICILLANIC ACID AND SALTS THEREOF

James J. Hamsher, Pawcatuck, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 23, 1973, Ser. No. 335,435
Int. Cl. C07d *99/14*
U.S. Cl. 260—306.7 C **15 Claims**

1. A process for isolating 6-aminopenicillanic acid, its sodium salt, its potassium salt or its hydrochloride acid addition salt from an aqueous solution containing 6-aminopenicillanic acid, its sodium salt, its potassium salt or its hydrochloride acid addition salt at a concentration of 2–10 weight percent per unit volume and either phenylacetic acid or phenoxyacetic acid, which comprises the steps of spray drying said hydrolysis solution at 125°–275°C. while at pH 2–8 and extracting the phenylacetic acid or phenoxyacetic acid with an organic solvent.

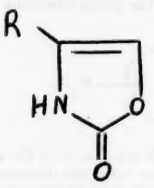
3,879,410

4-ARYL-4-OXAZOLIN-2-ONES EXHIBITING MYOTONIC AND MYORELAXING ACTIVITY

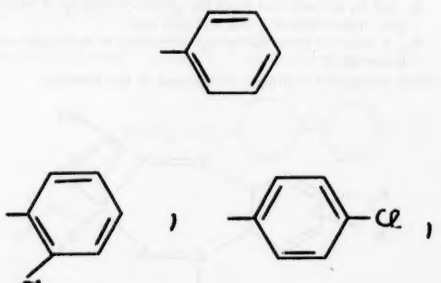
Francesco Bottari; Marco Fabrizio Saettone, both of Pisa; Maria Francesca Serafini, Carrara, and Natale Tellini, Pisa, all of Italy, assignors to Messrs. Laboratorio Guidotti & C. S.p.A., Pisa, Italy

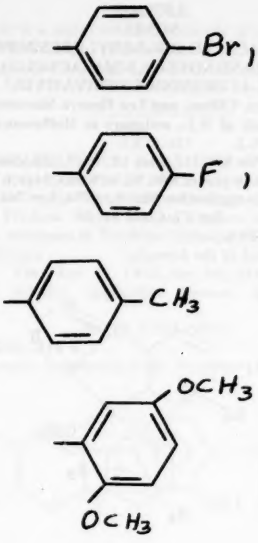
Filed Feb. 3, 1972, Ser. No. 223,090
Claims priority, application Italy, Feb. 8, 1971, 45210/71
Int. Cl. C07d *85/38*
U.S. Cl. 260—307 C **3 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of:



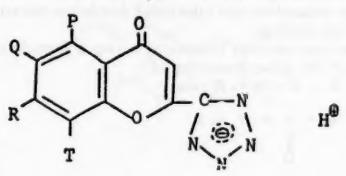


3,879,411
DITETRAZOLYL-BENZODIPYRANS

Hugh Cairns, Loughborough, and Robert Minshull, Sandbach, both of England, assignors to Fisons Limited, London, England

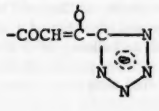
Filed July 24, 1972, Ser. No. 274,204
Claims priority, application United Kingdom, July 23, 1971, 34575/71
Int. Cl. C07d 99/04
U.S. Cl. 260—308 D 3 Claims

1. A compound of formula I,



I

in which one adjacent pair of P, Q, R and T represents the chain



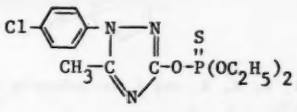
and the remainder of P, Q, R and T are the same or different and each is hydrogen; lower alkyl or lower alkoxy and pharmaceutically acceptable salts thereof.

3,879,412
1-(4-CHLOROPHENYL)-5-METHYL-3-(0,0-DIETHYLTHIONO PHOSPHORYL)-1,2,4-TRIAZOLE

Dag Dawes, Prattele, and Beat Boehner, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 217,289, Jan. 12, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 456,926
Claims priority, application Switzerland, Jan. 19, 1971, 775/71; Oct. 22, 1971, 15409/71; Nov. 19, 1971, 16876/71
Int. Cl. C07f 9/16
U.S. Cl. 260—308 R 1 Claim

1. The compound of the formula

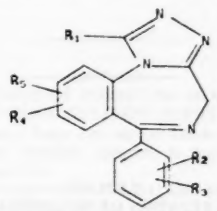


3,879,413
PROCESS FOR THE PRODUCTION OF 6-PHENYL-4-H-S-RIAZOLO [4,3-A][1,4]BENZODIAZEPINES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

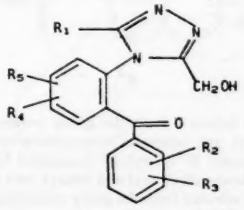
Division of Ser. No. 332,377, Feb. 14, 1973. This application May 20, 1974, Ser. No. 471,495
Int. Cl. C07d 57/02
U.S. Cl. 260—308 R 5 Claims

1. A process for the production of a 6-phenyl-4H-s-triazolo[4,3-a][1,4]benzodiazepine of the formula III



III

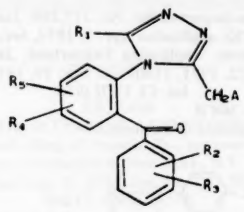
wherein R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, phenyl, benzyl and -COOR' in which R' is alkyl defined as above; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl as defined above, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, and alkanoylamino in which the carbon moiety is between 1 to 3 carbon atoms, inclusive, and dialkylamino in which alkyl is defined as above, which comprises: treating a compound of formula I:



I

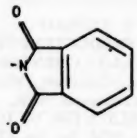
wherein R_1, R_2, R_3, R_4, and R_5 are defined as above, in a mixture with phthalimide and triphenylphosphine in an inert

water-free organic solvent with diethyl azodicarboxylate between a temperature of 0° to 100° C., for a period of 2 to 36 hours; extracting the mixture and recovering the thus obtained phthalimido compound of formula II



II

wherein R_1, R_2, R_3, R_4, and R_5 are defined as above and wherein A is



treating compound II, in an alkanol of 1 to 3 carbon atoms, inclusive, with hydrazine hydrate at a temperature between 25°–100° C. to obtain the compound of formula III above.

3,879,414

ENOL BETAINES OF BENZIMIDAZOLES

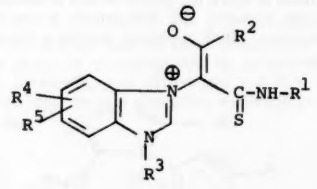
Rudiger D. Haugwitz, Titusville, and Venkatachala L. Narayanan, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed June 21, 1973, Ser. No. 372,357

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **4 Claims**

1. A compound of the formula:



wherein R^1 is selected from the group consisting of lower alkyl, allyl, aryl, and saturated hydrocarbon ring system of 3 to 8 carbon atoms; R^2 is aryl; R^3 is selected from the group consisting of lower alkyl, aryl and benzyl; and R^4 and R^5 are independently selected from the group consisting of hydrogen, lower alkyl, aryl, halo and nitro; and wherein aryl is selected from the group consisting of phenyl, naphthyl, and substituted phenyl wherein said substituent is fluoro, chloro, bromo, iodo, nitro, trifluoromethyl, lower alkyl, or lower alkoxy.

3,879,415

NOVEL 2[2-(1,3-DIAZACYCLOALK-2-ENYL)]BENZOPHENONE DERIVATIVES AND NOVEL 1,3-DIAZACYCLOALKENYL [2,1-A] ISOINDOLE DERIVATIVES

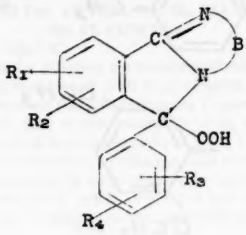
Werner Metlesics, Clifton, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 639,315, May 18, 1967, abandoned, which is a continuation-in-part of Ser. No. 629,965, March 30, 1967, abandoned. This application May 6, 1974, Ser. No. 467,030

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **3 Claims**

1. A compound of the formula:



wherein B represents an alkylene chain of 2 carbon atoms in which one or more of the hydrogens can be replaced by lower alkyl; and R_1, R_2, R_3, and R_4 are each independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, and trifluoromethyl.

3,879,416

METHOD FOR PREPARING INDAZOLONE DERIVATIVES

Theodore C. Kraus, Cheshire, and Manfred G. Noack, Northford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed July 3, 1972, Ser. No. 268,303

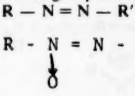
Int. Cl. C07d *49/14*

U.S. Cl. 260—310 A **10 Claims**

1. A method for preparing an indazolone compound selected from the group consisting of 2-phenylindazolone, benzolylene indazolone and substituted derivatives thereof which comprises reacting

A. an azo or azoxy compound having a formula selected from the group consisting of:

1. R — N = N — R′, and



wherein each R and R′ in said azo or azoxy compound is a phenyl or substituted phenyl group, said substituents being selected from the group consisting of alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms, aralkyl and alkylaryl of 6 to 20 carbon atoms, alkoxy and alkylthio of 1 to 8 carbon atoms, halogen, carboxy and carbalkoxy of 1 to 8 carbon atoms, cyano and isocyanato with the proviso that at least one of the four ortho positions is free with

B. carbon monoxide

C. at an elevated temperature and

D. at an elevated pressure

E. in the presence of a catalytic amount of a metal halide-Lewis base catalyst complex having the formula:

ML_2X_2

wherein M is a metal selected from the group consisting of nickel, palladium and platinum; L is a Lewis base selected from the group consisting of pyridine, quinoline and isoquinoline; and X is a halide or pseudo halide.

3,879,417

3-4-(PYRAZOLE-1-YL)-3-HALOPHENYL-7-ALKOXY COUMARIN DERIVATIVES

Annick Marthe Suzanne Simone Domergue, Eaubonne, and Robert Frederic Michel Sureau, Enghien les Bains, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

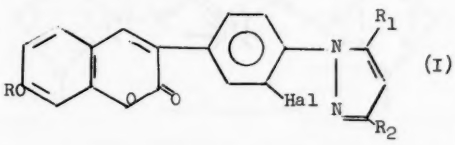
Filed Apr. 17, 1973, Ser. No. 351,941

Claims priority, application France, Apr. 18, 1972, 72.13524

Int. Cl. C07d *49/18*

U.S. Cl. 260—310 R **3 Claims**

1. Coumarin compound of the formula:



(I)

in which Hal represents halogen, R represents an alkyl group of 1 to 5 carbon atoms, each of the substituents R_1 or R_2, which are the same or different, represents an alkyl group of 1 to 3 carbon atoms or a phenyl group.

3,879,418

1,1-DISUBSTITUTED-2-ALKYL 3-OXO-ISOINDOLINES

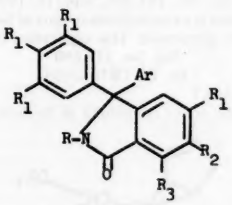
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 74,467, Sept. 22, 1970, Pat. No. 3,741,980. This application Mar. 12, 1973, Ser. No. 340,239

Int. Cl. C07d *27/50*

U.S. Cl. 260—325 PH **3 Claims**

1. A compound of the formula



wherein

R represents primary and secondary lower alkyl,

each R_1 independently, represents hydrogen, halo having an atomic weight of 19 to 36, trifluoromethyl, lower alkoxy or lower alkyl;

or two of R_1 together represent methylenedioxy, provided they are on adjacent carbon atoms;

R_2 represents hydrogen, trifluoromethyl, loweralkoxy or lower alkyl;

R_3 represents hydrogen, halo having an atomic weight of 19–36, or lower alkoxy; and

Ar represents phenyl, pyridyl, thienyl, furyl or naphthyl; provided no two trifluoromethyl groups are on adjacent carbon atoms, provided also that no more than three of R_1, R_2 and R_3 are other than hydrogen, and that no more than two of R_1, R_2 and R_3 are other than hydrogen in one ring, or a pharmaceutically acceptacle acid addition salt thereof.

3,879,419

S-(1,1-DIOXO-2,3-DIHYDRO-3-BENZOTHIENYL) PHOSPHOROTHIOATES

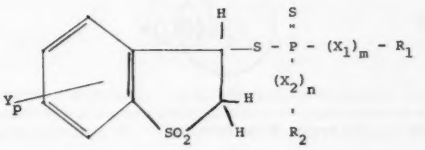
Frank Ross, Villa Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Nov. 27, 1970, Ser. No. 93,420

Int. Cl. C07d *63/08*

U.S. Cl. 260—330.5 **7 Claims**

1. A compound of the formula:



wherein each *y* is independently selected from the group consisting of lower alkyl, halogen, lower alkoxy, lower chloroalkyl, nitro, acetyl, acetyloxy, and acetylamino; each *x* is oxygen or sulfur; *p* is an integer from 0 to 3; *m* is 1; *n* is 0 or 1; R_1 and R_2 are independently selected from the group consisting of lower alkyl, lower haloalkyl, benzyl, cyclohexyl, and phenyl

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3,879,420

METHOD OF PRODUCING MIXED TRICYCLOALKYLIDENE PEROXIDES

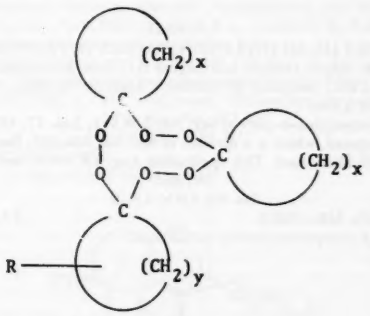
Paul Richard Story; Bunge Lee, both of Athens, Ga., and Peter Busch, Willich, Germany, assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 842,689, July 17, 1969, abandoned. This application May 15, 1972, Ser. No. 253,576

Int. Cl. C07d *19/00*

U.S. Cl. 260—338 **7 Claims**

1. A method for preparing nonsymmetrical trimeric peroxides of the formula:

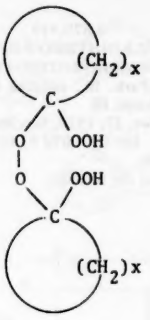


wherein:

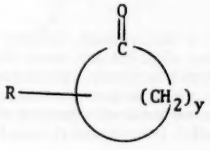
x and *y* are different and are positive integers of from 4 to 17

R is hydrogen or methoxy

which comprises reacting 1,1'-dihydroperoxydicyclic peroxide of the formula:



with a cyclic ketone of the formula:



wherein *x*, *y*, and R have the meanings set forth above in a liquid lower alkanoic acid solvent in the presence of a strong acid catalyst at a temperature in the range of from about −30°C to below 0°C.

3,879,421

CERTAIN METHYLENEDIOXYPHENYL PROPYNES

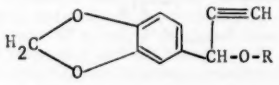
Don R. Baker, Orinda, and Eugene G. Teach, El Cerrito, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 218,511, Jan. 17, 1972, abandoned, which is a division of Ser. No. 884,685, Dec. 12, 1969, abandoned. This application Aug. 13, 1973, Ser. No. 387,885

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **4 Claims**

1. A compound having the formula



wherein R is selected from the group consisting of N-methyl carbamoyl, N-phenyl carbamoyl and N-p-chlorophenyl carbamoyl.

3,879,422

EPOXIDIZED DIKETAL OR DIACETAL FROM Δ³-CYCLOHEXENE-1,1-DIMETHANOL AND 1,4-CYCLOHEXANEDIONE OR TEREPHTHALALDEHYDE

Hans Batzer, Arlesheim; Juergen Habermeier, Allschwil, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

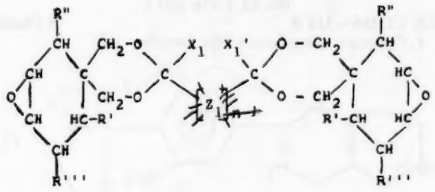
Division of Ser. No. 113,717, Feb. 8, 1971, Pat. No. 3,759,954. This application June 18, 1973, Ser. No. 371,009

Claims priority, application Switzerland, Feb. 13, 1970, 2136/70

Int. Cl. C07d *15/04*

U.S. Cl. 260—340.7 **3 Claims**

1. A diepoxide of the formula



wherein R' represents a member selected from the group consisting of hydrogen and methyl, R' and R'' each represents hydrogen, X_1 and X_1 each represents hydrogen or together form a divalent dimethylene residue and Z_1 represents a member selected from the group consisting of a dimethylene residue when X_1 and X_1' are a dimethylene residue and phenylene.

3,879,423

ETHERS

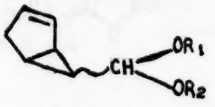
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 181,246, Sept. 16, 1971, Pat. No. 3,711,515, which is a continuation-in-part of Ser. No. 93,483, Nov. 27, 1970, abandoned. This application Dec. 15, 1972, Ser. No. 315,690

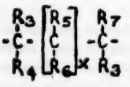
Int. Cl. C07d *13/04*

U.S. Cl. 260—340.7 **3 Claims**

1. An optically active compound of the formula



wherein R_1 and R_2 are alkyl of one to 4 carbon atoms, inclusive, or, when taken together,



wherein R_3, R_4, R_5, R_6, R_7, and R_8 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or phenyl, wit the proviso that not more than one of the R's is phenyl and the total number of carbon atoms is from 2 to 10, inclusive; *x* is zero or one, and ~ indicates attachment of the moiety of the cyclopropane ring in exo or endo configuration.

3,879,424

INTERMEDIATE FOR THE SYNTHESIS OF ZEAXANTHINS, XANTHOPHYLLS, AND 3-β-CAROTENE

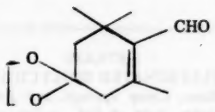
Joseph Donald Surmatis, and Armin Walser, both of West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 163,436, July 16, 1971, Pat. No. 3,732,214, which is a division of Ser. No. 55,565, July 19, 1970, Pat. No. 3,661,997, which is a division of Ser. No. 617,787, Feb. 23, 1967, Pat. No. 3,558,712. This application Jan. 22, 1973, Ser. No. 325,690

Int. Cl. C01d *13/02*

U.S. Cl. 260—340.9 1 Claim

1. A compound of the formula:



3,879,425

ETHYLENE ACETAL OF 3-PHENYL-4-PENTENAL

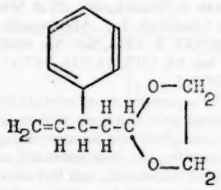
John B. Hall, Rumson, and Manfred Vock, Locust, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 276,923, Aug. 1, 1972, Pat. No. 3,829,504, which is a continuation-in-part of Ser. No. 43,555, June, 1970, Pat. No. 3,694,232. This application Mar. 25, 1974, Ser. No. 454,113

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 1 Claim

1. 3-phenyl-4-pentenal ethylene acetal having the structure:



3,879,426

HYDROXYMETHYLENE-SUBSTITUTED CHROMONE-3-ARBOXALDEHYDES AND PROCESS FOR THEIR PREPARATION

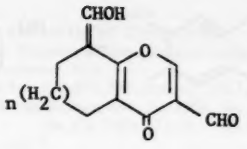
Daniel Kaminsky, Parsippany, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 18, 1973, Ser. No. 352,134

Int. Cl. C07d *7/34*

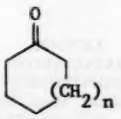
U.S. Cl. 260—345.2 4 Claims

1. A process for preparing a compound of the formula I:



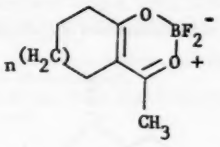
I

wherein *n* represents 1 or 2, which comprises reacting a cycloalkanone of the formula II:



II

wherein *n* represents 1 or 2, with a boron trifluoride compound and acetic anhydride, to obtain an intermediate of the general formula III:



III

wherein *n* represents 1 or 2, and reacting boron complex intermediate III with a Vilsmeier reagent prepared from phosphorus oxychloride and dimethylformamide to obtain final compound I.

3,879,427

DERIVATIVES OF POLYCYCLIC GAMMA-PYRONES

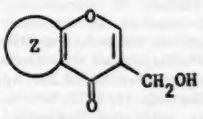
Maximilian von Strandtmann, Rockaway; John Shavel, Jr., Mendham; Sylvester Klutchko, Hackettstown, and Marvin P. Cohen, New Milford, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 309,329, Nov. 24, 1972, Pat. No. 3,798,240, which is a continuation-in-part of Ser. No. 112,765, Feb. 4, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,861

Int. Cl. C07d *7/32*

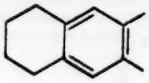
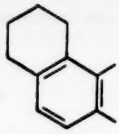
U.S. Cl. 260—345.2 6 Claims

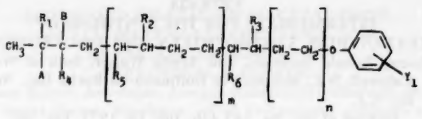
1. A compound of the formula I:



I

wherein the Z ring has one of the following structures:

(a)  or (b) 



wherein A and B are taken together to form an oxygen bridge; R_1 is methyl or ethyl, R_2 and R_3 are hydrogen, methyl or ethyl; R_4 is hydrogen or methyl; R_5 and R_6 are hydrogen or lower alkyl; Y_1 is lower alkyl; and m and n are 0 or 1.

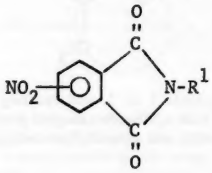
3,879,428
METHOD FOR MAKING AROMATIC BIS(ETHER ANHYDRIDE)S

Darrell R. Heath, Pittsfield, Mass., and Tohru Takekoshi, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,473
Int. Cl. C07c *63/48, 63/00*
U.S. Cl. 260—346.3 **12 Claims**

1. A method for making an aromatic-bis(ether anhydride) which comprises

a. effecting the nitro displacement of a nitrophthalimide of the formula,



with an alkali diphenoxide of the formula,

M-O-R-O-M

to produce an intermediate aromatic-bis(etherphthalimide), (b) hydrolyzing the aromatic-bis(etherphthalimide) of (a) with base to produce a tetra-acid salt, (c) acidifying the tetra-acid salt to produce the corresponding tetra-acid, and (d) dehydrating the tetra-acid to the aromatic-bis(ether anhydride), where R is a divalent aromatic organic radical having from 6–30 carbon atoms, M is an alkali metal ion, and R^1 is a monovalent organo radical selected from the class consisting of organic radicals having from 6–20 carbon atoms selected from the class consisting of aromatic hydrocarbon radicals and halogenated derivatives thereof, and $C_{(1-8)}$ alkyl radicals.

3,879,429
PHENYL DERIVATIVES

Madhukar Subraya Chodnekar, 6 Rebhaldenstrasse, Seltisberg; Albert Pfiffner, 10 Grampenweg, Bulach; Norbert Rigassi, 3 Gehrenmattstrasse, Arlesheim; Ulrich Schwieter, 8 Im Pfeiffengarten, Reinach, and Milos Suchy, 3 Grossplatzstrasse, Pfaffhaysen, all of Switzerland

Continuation-in-part of Ser. No. 30,295, April 20, 1970. This application Aug. 11, 1972, Ser. No. 279,897
Claims priority, application Switzerland, Apr. 30, 1969, 6597/69; South Africa, Mar. 23, 1970, 70/2003; Australia, Apr. 7, 1970, 13535/70
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 R **6 Claims**

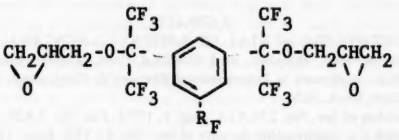
1. A compound of the formula:

3,879,430
HIGHLY FLUORINATED DIGLYCIDYL ETHERS

Jacques G. O'Rear, Camp Springs, and James R. Griffith, Riverdale Heights, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 13, 1973, Ser. No. 397,207
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 R **3 Claims**

1. A fluorinated diglycidyl ether of the formula



wherein R_f is $CF_3(CF_2)_x$, x being an integer from 2 to 10.

3,879,431
PURIFICATION OF STEROLS BY DISTILLATION

James P. Clark, Forest Lake; Jimmy A. Demars, and Gerald G. Wilson, both of Minneapolis, all of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Oct. 5, 1973, Ser. No. 404,089
Int. Cl. C07c *167/38, 167/42*
U.S. Cl. 260—397.25 **13 Claims**

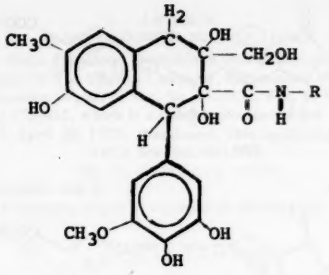
1. A process for separating sterol mixture including campesterol and sitosterol into fractions rich in campesterol and residue rich in sitosterol, said mixture being obtained from unsaturated vegetable oil, said sitosterol and campesterol being in the form of free sterols, said free sterols being present in an amount of at least 10% by weight, said method comprising distilling said mixture at a vapor temperature of between 225°C. and 270°C. and an absolute pressure of between 0.05 and 3.5 mm of Hg. to provide a distillate fraction rich in campesterol and a residue fraction rich in sitosterol.

3,879,432
PLICATAMIDES

Richard Frank Buchholz, and Marten Reintjes, both of Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 316,056, Dec. 18, 1972, Pat. No. 3,810,941. This application Feb. 12, 1974, Ser. No. 441,800
Int. Cl. C11b *5/00*
U.S. Cl. 260—398.5 **2 Claims**

1. In a composition containing an oil or fat and an antioxidant therefor, the improvement in which the antioxidant comprises a plicatamide of the structural formula



wherein R is selected from the group consisting of ethyl and n-propyl.

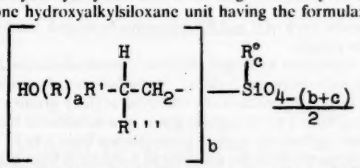
3,879,433

HYDROXYALKYLSILOXANE RIGID URETHANE FOAM STABILIZERS

George M. Omietanski, and Vincent T. Chuang, both of Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,528
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 B 5 Claims

1. A hydroxyalkylsiloxane consisting essentially of (A) at least one hydroxyalkylsiloxane unit having the formula:



wherein R is a divalent hydrocarbon group free of aliphatic carbon to carbon multiple bonds, R′ is an arylene group, a cycloalkylene group that has no hydrogen atom bonded to the carbon atom attached to the $-HC(R''')-CH_2-$ group and that is free of aliphatic carbon to carbon multiple bonds or a divalent $-CR_2''-$group, R″ and R° are each monovalent hydrocarbon groups free of aliphatic carbon to carbon multiple bonds and having from 1 to 10 inclusive carbon atoms, R‴ is hydrogen or a monovalent hydrocarbon group free of aliphatic carbon to carbon multiple bonds, each hydroxyalkylsiloxane group has no more than 20 carbon atoms, *a* has a value of 0 or 1, *b* has a value of 1, 2 or 3, *c* has a value of 0, 1 or 2, and (*b*+*c*) has a value of 1, 2 or 3; and (B) at least three hydrocarbylsiloxane units represented by the formula:

$$R_d^{\circ\circ}SiO_{(4-d/2)}$$

wherein $R^{\circ\circ}$ is a monovalent hydrocarbon group free of aliphatic carbon to carbon multiple bonds and having from 1 to 10 inclusive carbon atoms and *d* has a value of 1, 2 or 3, the molecular weight of the siloxane portion of the hydroxyalkylsiloxane being from about 250 to about 1,300 inclusive, and, when dihydrocarbylsiloxane units ($R_2^{\circ\circ}SiO$ units) are present, the ratio of hydroxyalkylsiloxane units to dihydrocarbylsiloxane units is at least 0.5 to 1.0.

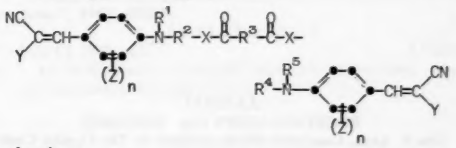
3,879,434

BIS-METHINE COMPOUNDS

Max A. Weaver, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 675,799, Oct. 17, 1967, Pat. No. 3,597,434. This application Nov. 23, 1970, Ser. No. 92,268
Int. Cl. C07c 121/70
U.S. Cl. 260—465 D 10 Claims

1. A compound having the formula



wherein

R^1 and R^5 each is lower alkyl; lower alkyl substituted with lower alkoxy or phenyl; or cyclohexyl;

R^2 and R^4 each is lower alkylene;

R^3 is lower alkylene; vinylene; cyclohexylene; cyclohexylene-di-lower-alkylene; phenylene; phenylene substituted with lower alkyl, lower alkoxy, chlorine, bromine or halogen; or a group having the formula $-R^7-A-R^8-$ wherein R^7 and R^8 each is alkylene of 1 to 3 carbon atoms and A represents oxygen, sulfur, sulfonyl, or $-NR^9-$ wherein R^9 is hydrogen or lower alkyl;

X is —O— or —NH—;

Y is cyano, lower alkoxycarbonyl, carbamoyl, lower alkylsulfonyl or phenylsulfonyl;

each Z is hydrogen, lower alkyl, lower alkoxy, chlorine or bromine; and

n is 1 or 2.

3,879,435

PROCESS FOR THE PRODUCTION OF ACRYLONITRILE

Edward James Gasson, Dollar; Thomas Charles Korsnar, Polmont, and Stanley Frederic Marrian, Fife, all of Scotland, assignors to BP Chemical International Limited, London, England

Filed Sept. 24, 1973, Ser. No. 400,199
Claims priority, application United Kingdom, Oct. 5, 1972, 45959/72
Int. Cl. C07c 121/02
U.S. Cl. 260—465.3 6 Claims

1. A process for the production of acrylonitrile which comprises reacting at an elevated temperature in the vapor phase propylene, molecular oxygen and ammonia over a catalyst which is an oxide composition which is a mixture of oxides of the metal components or oxygen-containing compounds of such matals or a mixture of both and whose metallic components essentially consist of antimony, titanium, copper and an additional metal selected from the group consisting of chromium, molybdenum, tungsten, iron, cobalt and vanadium, said catalyst having been heat treated before use at a temperature between 550°–1100°C in a molecular oxygen containing gas and the atomic ratio of antimony to each of the other metals in said catalyst is 2:1 to 24:1.

3,879,436

TREATMENT OF ADIPONITRILE

Bernard John Kersham, and Maurice George Pounder, both of Kingston, Ontario, Canada, assignors to Du Pont of Canada Limited, Montreal, Quebec, Canada

Filed Mar. 13, 1974, Ser. No. 450,575
Claims priority, application Canada, Mar. 29, 1973, 167526
Int. Cl. C07c 121/26
U.S. Cl. 260—465.8 R 11 Claims

1. A process for the simultaneous removal of 2-cyanocyclopentylideneimine and adipimide by treatment of crude adiponitrile synthesized from ammonia and adipic acid, said adiponitrile comprising 2-cyanocyclopentylideneimine

and adipimide, succinimide and/or glutarimides, comprising the steps of (a) treating the crude adiponitrile with an aqueous solution comprising about 0.02 to about 0.90%, by weight of ammonia based on the total amount of water present, at a temperature in the range 50° to 210°C., said aqueous solution having sufficient ammonia to treat at least about 20% of the adipimide in the crude adiponitrile, and (b) separating the adiponitrile so treated.

3,879,437

PROSTAGLANDIN $F_{3\beta}$ ANALOGS

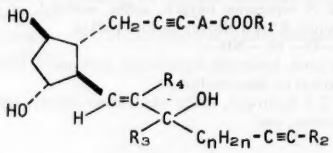
Udo F. Axen, Comstock, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 112,032, Feb. 2, 1971, Pat. No. 3,775,462, which is a continuation-in-part of Ser. No. 30,312, April 20, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,957

Int. Cl. C07c *61/32, 64/74*

U.S. Cl. 260—468 D **23 Claims**

1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or β,β,β-trichloroethyl; wherein R_2 is alkyl of one to 4 carbon atoms, inclusive, substituted with zero to 3 fluoro; wherein R_3 and R_4 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein n is an integer of one to 4, inclusive; wherein A is alkylene of one to 10 carbon atoms, inclusive, substituted with zero to 2 fluoro, and with one to 5 carbon atoms, inclusive, between $—COOR_1$ and

or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

3,879,438

4,5,13-PROSTATRIENOIC ACID DERIVATIVES

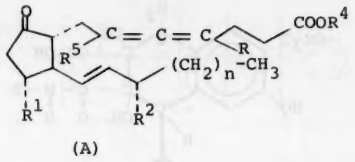
Pierre Crabbe, Grenoble, France, and John H. Fried, Palo Alto, Calif., assignors to Syntex (U.S.A.), Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 338,325, March 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 306,414, Nov. 14, 1972, abandoned, which is a continuation-n-part of Ser. No. 204,769, Dec. 3, 1971, abandoned. This application June 11, 1973, Ser. No. 368,983

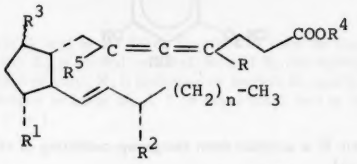
Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D **86 Claims**

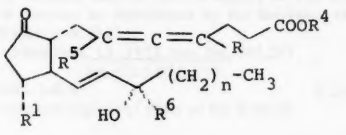
1. A compound selected from the group consisting of racemic mixtures and 8R-antimers of those represented by the formulas:



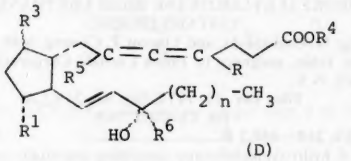
(A)



(B)



(C)



(D)

wherein each of R and R^3 represents hydrogen, methyl ethyl or propyl;

R^1 represents hydrogen, hydroxy, tetrahydrofuran-2-yloxy, tetrahydropyran-2-yloxy, 4-methoxytetrahydropyran-4-yloxy, a hydrocarbon carboxylic acyloxy group containing from 1 to 12 carbon atoms or a substituted hydrocarbon carboxylic acyloxy group having from 1 to 12 carbon atoms wherein the substituent is selected from the group consisting of hydroxy, alkoxy containing up to twelve carbon atoms, nitro, amino and halogen;

each of R^2 and R^3 represents hydroxy, tetrahydrofuran-2-yloxy, tetrahydropyran-2-yloxy, 4-methoxytetrahydropyran-4-yloxy, a hydrocarbon carboxylic acyloxy group containing from 1 to 12 carbon atoms or a substituted hydrocarbon carboxylic acyloxy group having from 1 to 12 carbon atoms wherein the substituent is selected from the group consisting of hydroxy, alkoxy containing up to twelve carbon atoms, nitro, amino and halogen;

R^6 represents methyl, ethyl or propyl;

R^4 represents hydrogen, a lower alkyl group or the pharmaceutically acceptable, non-toxic salts of compounds in which R^4 is hydrogen;

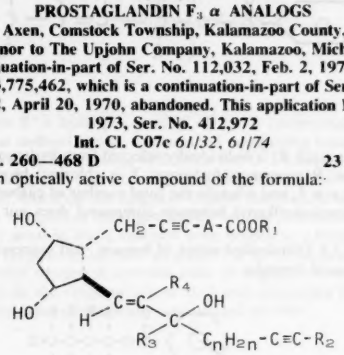
n is an integer of from 2 to 9, and the wavy lines ( ) indicate the α or β configuration, or mixtures thereof, provided that when R^6 is α, the hydroxyl group, attached to the same carbon atom as R^6, is β; and when R^6 is β, the hydroxyl group, attached to the same carbon atom as R^6, is α; and further provided that in formulas (A) and (B) and R and R^3 are hydrogen and R^1 is other than hydrogen *n* is only 4.

3,879,439
PROSTAGLANDIN $F_3\alpha$ ANALOGS

Udo F. Axen, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 112,032, Feb. 2, 1971, Pat. No. 3,775,462, which is a continuation-in-part of Ser. No. 30,312, April 20, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,972
Int. Cl. C07c *61/32, 61/74*
U.S. Cl. 260—468 D 23 Claims

1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or β,β,β-trichloroethyl; wherein R_2 is alkyl of one to 4 carbon atoms, inclusive, substituted with zero to 3 fluoro; wherein R_3 and R_4 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein n is an integer of one to 4, inclusive; wherein A is alkylene of one to 10 carbon atoms, inclusive, substituted with zero to 2 fluoro, and with one to 5 carbon atoms, inclusive, between —$COOR_1$ and

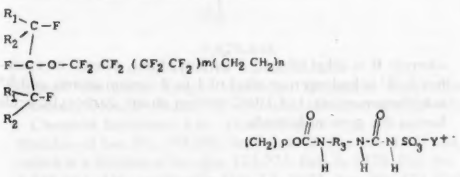
or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

3,879,440
TERTIARY AMINE SULFAMIC ACID SALTS OF POLYFLUOROISOALKOXYALKYL CARBAMATES

Louis Gene Anello, Basking Ridge, and Richard F. Sweeney, Randolph Township, Dover, Morris County, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 8, 1968, Ser. No. 774,532
Int. Cl. C07c *143/63*
U.S. Cl. 260—470 3 Claims

1. A compound of the formula:



wherein R_1 and R_2 independently are fluorine or perfluoroalkyl of 1–2 carbon atoms; *m* and *n* are integers from 0–10; R_3 is tolylene; Y is a positively changed tertiary amine residue which may be substituted with straight or branched chain aliphatic and alicyclic groups and *p* is an integer from 0–1 with the proviso that when *p* is 0, *n* must be at least one.

3,879,441
(N,N-DIMETHYL-N-[3-METHYLMETALOLY CARBAMYLOXY)-PHENYL]-UREA

Gerhard Boroschewski; Frederich Arndt, and Reinhard Rusch, all of Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

Continuation of Ser. No. 663,938, Aug. 29, 1967, abandoned. Filed July 10, 1970, Ser. No. 53,988
Claims priority, application Germany, Sept. 5, 1966, 39491; June 7, 1967, 40838
Int. Cl. C07c *101/18*
U.S. Cl. 260—471 C 1 Claim

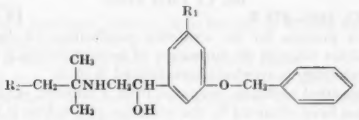
1. N,N-dimethyl-N'-(3-(N''-methyl-N''-(3'-methyl phenyl)-carbomoyloxy)-phenyl-urea.

3,879,442
5-HYDROXY-α(SUBSTITUTED AMINOMETHYL)-MU-XYLENE-α,α-DIOLS

Charles F. Schwender, Lebanon, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 275,611, July 27, 1972. This application Dec. 26, 1973, Ser. No. 428,557
Int. Cl. C07c *101/42*
U.S. Cl. 260—471 R 5 Claims

1. A compound of the formula:



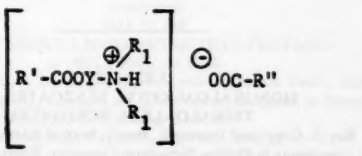
wherein R_1 is —COOH or —$COOCH_3$ and wherein R_2 is phenyl or hydrogen, with the proviso that R_2 is hydrogen only when R_1 is —COOH and R_2 is phenyl only when R_1 is —$COOCH_3$.

3,879,443
SUN-SCREENING COMPOUNDS III

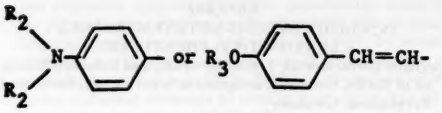
Albert Frederick Strobel, Delmar, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 465,258
Int. Cl. C07c *101/72*
U.S. Cl. 260—472 7 Claims

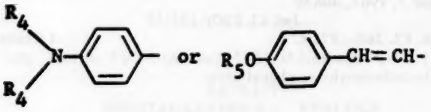
1. A compound of the formula:



where
R' is



R'' is



R_1, R_2, R_3, R_4 and R_5 are independently lower alkyl and Y is a C_2-C_6 alkylene.

3,879,444

PROCESS FOR THE OXIDATIVE PURIFICATION OF DIMETHYL PHTHALATES

Yasuhiro Fujita, Hiroshima; Takenori Nagaoka, Yamaguchi, and Yuji Simokawa, Hiroshima, all of Japan, assignors to Mitsui Petrochemical Ind., Ltd., Tokyo, Japan

Filed Apr. 13, 1973, Ser. No. 350,874

Claims priority, application Japan, Apr. 13, 1972, 47-036488

Int. Cl. C07c *69/80*

U.S. Cl. 260—475 B **18 Claims**

1. A process for the oxidative purification of dimethyl phthalates wherein the formation of impurities which reduce color stability is avoided characterized in that:

a dimethyl phthalate prepared from a phthalic acid which has been obtained by the oxidation of a xylene is treated with a gas containing molecular oxygen in the presence of a compound selected from the group consisting of an alkali metal compound, an alkaline earth metal compound and a mixture thereof in combination with a heavy metal compound, said purification being under liquid phase conditions, and then the dimethyl phthalate is separated from the resultant oxidized product; wherein

the amount of the compound selected from the group consisting of the alkali metal compound, alkaline earth metal compound and mixture thereof added is in the range of about 10^{-10} gram-atoms to about 5×10^{-5} gram-atoms, in terms of metal atoms, per 1 g of dimethyl phthalate;

the alkali metal and/or alkaline earth metal compounds are at least one member selected from the group consisting of organic acid salts having 1 to 20 carbon atoms, carbonates, bicarbonates, phosphates, borates, hydroxides, alcoholates having 1 to 5 carbon atoms and phenolates having 6 to 8 carbon atoms of alkali metals and alkaline earth metals; and

the heavy metal compound is selected from the group consisting of a compound of chromium, manganese, nickel and copper.

3,879,445

MONOHALOALKENYL BENZOATES AND TRIHALOALKYL BENZOATES

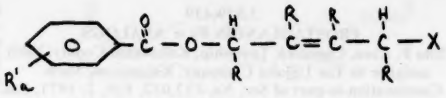
Roy A. Gray, and Donnie G. Brady, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 19, 1972, Ser. No. 245,387

Int. Cl. C07c *69/78*

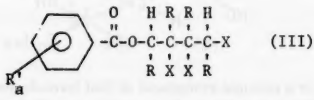
U.S. Cl. 260—476 R **9 Claims**

1. Unsaturated monohaloalkenyl benzoate compounds represented by the general formula:



wherein each R^1 is individually selected from hydrogen, X or fluorine; R represents hydrogen; X is chlorine, bromine or iodine; *a* is 5; and wherein the total number of carbon atoms per monohaloalkenyl benzoate compound does not exceed 20.

4. 2,3,4-Trihaloalkyl esters of benzoic acid represented by the general formula:



(III)

in which each R represents hydrogen or a radical which is alkyl, cycloalkyl, aryl, aralkyl, or alkaryl; X is chlorine, bromine, or iodine; each R' is individually selected from hydrogen, alkyl, X, or fluorine; a is 5; wherein the total number of carbon atoms per 2,3,4-trihaloalkyl ester of benzoic acid does not exceed 20; and wherein the halogens in the 2 and 3 position are the same.

3,879,446

PREPARATION OF UNSATURATED ORGANIC COMPOUNDS BY OXIDATIVE DEHYDROGENATION

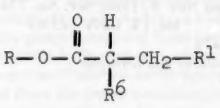
Alden E. Blood, and Hugh J. Hagemeyer, Jr., both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 830,628, June 5, 1969, abandoned, which is a continuation-in-part of Ser. No. 388,196, Aug. 7, 1964, abandoned. This application Nov. 21, 1972, Ser. No. 308,385

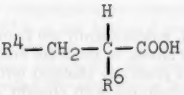
Int. Cl. C07c *69/54*

U.S. Cl. 260—486 D **15 Claims**

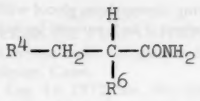
1. A method for the oxidative dehydrogenation of at least one organic compound containing at least two adjacent carbon atoms each of which contains at least one hydrogen atom, said compounds being selected from the group consisting of organic esters having the general formula



wherein R is alkyl of 1 to 8 carbon atoms, phenyl or cyclohexyl, R^1 is hydrogen or alkyl of 1 to 9 carbon atoms, and R^6 is hydrogen or alkyl of 1 to 2 carbon atoms; carboxylic acids having the general formula



and aliphatic amides having the general formula



wherein R^4 is hydrogen or alkyl of 1 to 9 carbon atoms, and R^6 is as defined above; said method comprising heating to a temperature in the range of 300° to 400°C. a reaction mixture comprising said organic compound and from about 0.5 to 10 percent, based on the weight of organic material, of hydrogen iodide as aqueous hydrogen iodide hydrate; introducing said heated mixture into a reaction zone heated to a temperature in the range of about 400° to about 750°C. in the presence of molecular oxygen in a molar ratio of organic compound to oxygen in the range of 1:1 to 10:1 and recovering from the reaction zone ethylenically unsaturated product.

3,879,447

MONOMERIC EMULSION STABILIZERS COMPRISING A LIPOPHILIC DIALLYL OR DIMETHALLYL QUATERNARY AMMONIUM COMPOUND

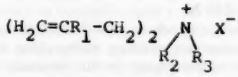
Carlos M. Samour, Wellesley, and Mildred C. Richards, Wakefield, both of Mass., assignors to The Kendall Company, Walpole, Mass.

Division of Ser. No. 40,719, May 26, 1970, Pat. No. 3,714,256. This application Sept. 5, 1972, Ser. No. 286,004

Int. Cl. C07c *101/02*

U.S. Cl. 260—482 R **2 Claims**

1. A compound having the formula



wherein R_1 is hydrogen or methyl; R_2 is alkyl or hydroxyalkyl having 1 to 7 carbon atoms, or R_4—O—CO—CH_2— wherein R_4 is hydrogen or alkyl having 1 to 4 carbon atoms; R_3 is —CH_2CO—OL, L is an aliphatic hydrocarbon chain having from about 7 to 28 carbon atoms, and X^- is halide or alkyl sulfate wherein the alkyl moiety has 1 to 18 carbon atoms, alkyl benzene sulfonate wherein the alkyl group has 1 to 12 carbon atoms, $R''C_6H_4O(-CH_2CHR'' \ 'O)_n \ CH_2—CHR'''SO_3$— wherein R'' is hydrogen or alkyl having 1 to 12 carbon atoms, R''' is hydrogen or methyl and n is zero or an integer of 1–4, dialkyl sulfosuccinate wherein the alkyl group has 1 to 24 carbon atoms, or alkyl phosphate wherein the alkyl group has 1 to 18 carbon atoms.

3,879,448

4-HEXENOIC COMPOUNDS

Hiroshi Morimoto, Hyogo; Masazumi Watanabe, and Isuke Imada, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

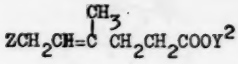
Division of Ser. No. 295,098, Sept. 5, 1972, Pat. No. 3,825,584, which is a division of Ser. No. 113,773, Feb. 8, 1971, Pat. No. 3,728,362. This application Dec. 13, 1973, Ser. No. 424,314

Claims priority, application Japan, Feb. 7, 1970, 45-10846; Feb. 11, 1970, 45-11616

Int. Cl. C07c *69/14, 69/66*

U.S. Cl. 260—484 R **3 Claims**

1. A 4-hexenoic compound of the formula



wherein Z is acetoxy and Y^2 is hydrogen or lower alkyl.

3,879,449

1-PHENYL-4-HYDROXY-1-BUTEN-3-ONES AND ESTERS THEREOF

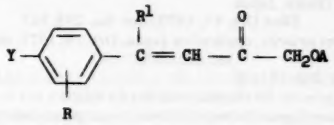
Paul L. Anderson, Dover, N.J., and Darryl A. Brittain, New York, N.Y., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Mar. 4, 1974, Ser. No. 447,967

Int. Cl. C07c *69/14, 69/24*

U.S. Cl. 260—488 CD **11 Claims**

1. A compound of the formula:

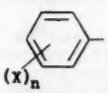


wherein

R is a hydrogen atom or halo having an atomic weight of from about 19 to 80;

R^1 is alkyl having from 1 to 3 carbon atoms;

Y is halo having an atomic weight of from about 34 to 80, isobutyl, tert.-butyl, or substituted or unsubstituted phenyl of the formula



wherein

X is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 4 carbon atoms, or alkyl having from 1 to 4 carbon atoms;

n is an integer from 1 to 3; **and**

A is a hydrogen atom or alkanoyl having from 2 to 4 carbon atoms.

3,879,450

SALTS OF 3-HYDROXY-2-HYDROXYMETHYL-PROPANE-SULFONIC ACID-1

Eugen Velker, Dormagen-Hackenbroich; Francis Bentz, and Helmut Reiff, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

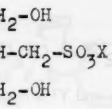
Filed May 18, 1973, Ser. No. 361,525

Claims priority, application Germany, May 18, 1972, 2224304

Int. Cl. C07c *143/02*

U.S. Cl. 260—513 R **3 Claims**

1. A compound of the formula



in which X represents NH_4 or an alkali metal.

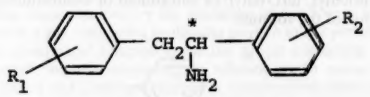
3,879,451

PROCESS FOR THE PRODUCTION OF (PLUS)-CIS-, (PLUS)-TRANS-MIXED CHRYSANTHEMIC ACID

Hirosuke Yoshioka, Ikeda; Hajime Hirai, Tokyo; Akira Toyoura, Nishinomiya, all of Japan, and Kenzo Ueda, Berkeley, Calif., assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 17, 1972, Ser. No. 298,247
Claims priority, application Japan, Oct. 19, 1971, 46-83120
Int. Cl. C07c 51/42
U.S. Cl. 260—514 H 4 Claims

1. A process for the preparation of a mixture of (+)-cis- and (+)-trans-chrysanthemic acids which comprises mixing a mixture of (±)-cis- and (±)-trans-chrysanthemic acids in an organic solvent selected from the group consisting of methanol, ethanol, propanol, isopropanol, acetone, methyl ethyl ketone, tetrahydrofuran, dioxane, dimethylformamide, dimethylsulfoxide, a mixture thereof and an aqueous mixture thereof, with a dextrorotatory organic amine having the formula,



wherein R_1 and R_2 are a hydrogen atom or a lower alkyl, crystallizing in a conventional manner the resulting mixture to form the amine salts of (+)-cis- and (+)-trans-chrysanthemic acids, and recovering a mixture of (+)-cis- and (+)-trans-chrysanthemic acids.

3,879,452

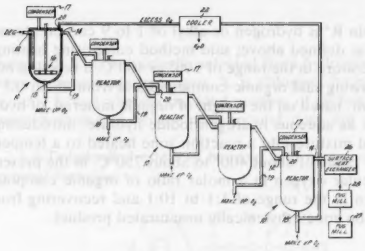
METHOD FOR MAKING DIGLYCOLIC ACID, DIPROPIONIC ACID AND THE SALTS THEREOF

George E. Brown, Jr., Cincinnati, Ohio, assignor to Conen Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 141,203, May 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 79,690, Oct. 9, 1970, abandoned. This application June 18, 1971, Ser. No. 154,584
Int. Cl. C07c 51/30, 59/12
U.S. Cl. 260—531 R 2 Claims

1. A method for manufacturing diglycolic acid which comprises oxidizing diethylene glycol with oxygen or air in the presence of about 3 to 5 percent by weight of water, at a temperature of about 80°to 150° C., and in the presence of about ½ to 2 percent by weight of cuprous acetate.

2. A method for manufacturing dipropionic acid which comprises oxidizing dipropylene glycol with oxygen or air in the presence of about 3 to 5 percent by weight of water, at a



temperature of about 80° to 150° C., and in the presence of about ½ to 2 percent by weight of cuprous acetate.

3,879,453

PROCESS FOR PRODUCING METHACROLEIN AND METHACRYLIC ACID

Isao Ono; Teruhisa Sakamoto, and Toshio Hironaka, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed May 30, 1973, Ser. No. 365,100
Claims priority, application Japan, May 30, 1972, 47-53662; Aug. 2, 1972, 47-77469
Int. Cl. C07c 51/32, 57/04
U.S. Cl. 260—533 N 12 Claims

1. A process for producing methacrolein and methacrylic acid which comprises reacting isobutylene with molecular oxygen in the vapor phase in the presence of a catalytic amount of a catalyst consisting essentially of a mixture of solid metal oxides represented by the empirical formula $Sb_aV_bMo_c$. $Te_dW_eM_fO_g$, wherein M represents at least one element selected from the group consisting of bismuth, thallium and uranium and wherein the elemental atomic ratios of said empirical formula have values of a=10, b=0.1–10, c=0.4–15, d=0.1–10, e=0–2, f=0–2 and g=16–127.

3,879,454

PREPARATION OF ALKYLPHOSPHONOTHIOIC DIHALIDES

James B. Hinkamp, Birmingham, and Vincent F. Hnizda, Huntington Woods, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Sept. 8, 1967, Ser. No. 666,507
Int. Cl. C07f 9/42
U.S. Cl. 260—543 P 5 Claims

1. A process for the preparation of a compound selected from the class consisting of CH_3PSCl_2 and $C_2H_5PSCl_2$, said process comprising

a. preparing thiophosphoryl trichloride by reacting sulfur with phosphorus trichloride in the presence of a catalytic quantity of aluminum chloride at a temperature within the range of from about 20° to about 75°C., and

b. reaction said thiophosphoryl trichloride in the thereby produced reaction mixture with an alkylating agent selected from trimethyl aluminum and triethyl aluminum at a reaction temperature of from about 60° to about 100°C.,

said process being conducted in the absence of added hydrocarbon solvent and with from about 1.0 to about 1.2 theories of said alkylating agent.

3,879,455

HERBICIDE COMPOSITIONS

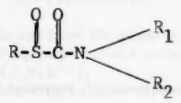
Harry Tilles, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 14, 1972, Ser. No. 280,389

Int. Cl. C07c *103/00*

U.S. Cl. 260—551 R 3 Claims

1. A compound represented by the following generic formula:



wherein R and R_1 are lower alkyl; R_2 is selected from the group consisting of phenyl and benzyl.

3,879,456

PROCESS FOR PREPARING CHLORTETRACYCLINE NEUTRAL BASE

Kurt H. Schaaf, Morris Plains, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Dec. 17, 1968, Ser. No. 784,477

Int. Cl. C07c *103/19*

U.S. Cl. 260—559 AT 7 Claims

1. In a process for preparing chlortetracycline neutral base, the steps consisting essentially of

a. bringing together chlortetracycline hydrochloride, and about 1.0 to about 1.6 mole of a water soluble salt of a carboxylic acid having from 2 to 4 carbon atoms selected from the group consisting of at least one of the acetate, propionate, butyrate or isobutyrate salts of sodium, lithium, potassium, ammonium, magnesium, calcium, zinc, iron (ferrous), or copper (cupric), per mole of said chlortetracycline hydrochloride in the presence of a solvent selected from the group consisting of water and an aqueous alkanol solution containing from about 1 to about 75% by weight of an alkanol having from about 1 to about 5 carbon atoms and about 99 to about 25% by weight of water thereby forming a slurry,

b. stirring said slurry to convert said chlortetracycline hydrochloride to chlortetracycline neutral base, and thereafter

c. recovering chlortetracycline neutral base from said slurry.

3,879,457

PROCESS FOR THE PRODUCTION OF PURE N-ALKYL FORMAMIDES

Jorg Hensel; Gerd Schaefer, and Gerd Schreyer, all of Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Aug. 29, 1972, Ser. No. 284,545

Claims priority, application Germany, Sept. 3, 1971, 2144230

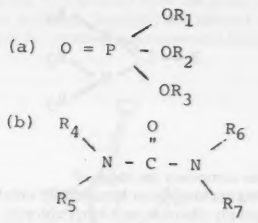
Int. Cl. C07c *103/30*

U.S. Cl. 260—561 R 29 Claims

1. In the process for the production of pure N-alkyl formamide from an olefin by the Ritter reaction, in the presence of a strong acid selected from the group consisting of sulfuric acid, hydrochloric acid, phosphoric acid and trifluoroacetic acid, the improvement comprising:

reacting the olefin with hydrogen cyanide and the acid using a molar ratio of olefin to acid below 1:2.5 at a temperature of 30° to 70° C.; and

extracting the unneutralized acid reaction mixture with a polar acid stable organic solvent which is selected from the group consisting of:



where R_1, R_2 and R_3 are selected from the group consisting of alkyl, aryl and aralkyl groups and R_1, R_2 and R_3 together contain a total of 8 to 39 carbon atoms and R_4, R_5, R_6 and R_7 individually are selected from the group consisting of alkyl of 1 – 5 carbon atoms, and

c. a chlorinated hydrocarbon selected from the group consisting of chloroform and methylene chloride, and then recovering the extracted formamide.

3,879,458

MICROBIOCIDAL COMPOUND AND PROCESS FOR THE PREPARATION THEREOF

Ulrich Holtschmidt, Essen, and Günter Schwarzmann, Essen-Uberruhr, both of Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Filed July 30, 1973, Ser. No. 383,678

Claims priority, application Germany, Sept. 13, 1972, 2244884

Int. Cl. C07c *87/34*

U.S. Cl. 260—563 R 1 Claim

1. 1-octylaminomethyl-2-octylamino-cyclopentane.

3,879,459

VULCANIZATION INHIBITING THIOFORMAMIDINE COMPOUNDS

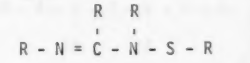
Marion J. Gattuso, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 26, 1974, Ser. No. 464,584

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 R 6 Claims

1. A novel compound comprising a substituted thioformamidine having the formula:



in which the R's are independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, and aralkyl radicals.

3,879,460

SYNTHESIS OF MONO-DI-, AND TRI-SUBSTITUTED AMIDINES

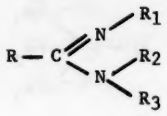
Robert Fuks, Brussels, Belgium, assignor to Union Carbide Corporation, New York, N.Y.

Filed May 8, 1973, Ser. No. 358,356

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 R 7 Claims

1. A process for the synthesis of a N-substituted amidine in a yield between about 30 per cent and about 80 per cent, said amidine having the formula:



which process comprises the steps of:

a. contacting acetonitrile or benzonitrile with ferric chloride and isoproply chloride or t-butyl chloride to form a nitrilium salt product, the reaction being conducted at a temperature of about 0°C for a time period not exceeding about 3 hours;

b. contacting an amine of the formula:

$$R_2R_3NH$$

with said nitrilium salt product to form a reaction product mixture said reaction product mixture being maintained at a temperature of about 0° to about 50°C for a time period not exceeding about 2 hours;

c. contacting said reaction product mixture with an aqueous solution of a base; and

d. separating a N-substituted amidine from said mixture, wherein R is selected from the group consisting of methyl and phenyl; R_1 is selected from the group consisting of isopropyl and t-butyl; and R_2 and R_3 each represent a group containing up to 12 carbon atoms and each is selected from the group consisting of a hydrogen atom, alkyl, alkenyl, aryl, alkaryl, aralkyl, cycloalkyl, cycloalkenyl, bicycloalkyl, haloalkyl, haloaryl, haloalkyaryl, pyridyl, hydroxyalkyl and hydroxyaryl.

3,879,461

VULCANIZATION INHIBITING COMPOUNDS

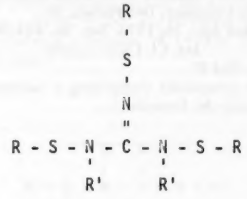
Marion J. Gattuso, Hoffman Estates, and Robert J. Arnold, Evanston, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 25, 1974, Ser. No. 454,627

Int. Cl. C07c *129/08*

U.S. Cl. 260—565 **5 Claims**

1. A compound having the formula:



in which R and R′ are independently selected from the group consisting of alkyl of from 1 to about 6 carbon atoms, cycloalkyl of from 3 to about 8 carbon atoms, phenyl and tolyl radicals.

3,879,462

AMINO SUBSTITUTED TETRAHYDROPLEIADENES

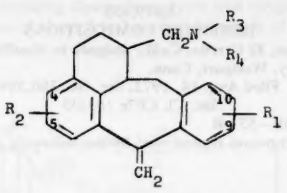
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed June 4, 1973, Ser. No. 366,764

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.9 **5 Claims**

1. A compound of the formula



where

R_1 and R_2 each independently represent hydrogen or fluoro, and

R_3 and R_4 each independently represent lower alkyl of 1 to 2 carbon atoms,

provided R_1 is in the 9 or 10 position and R_2 is in the 4 or 5 position, or a pharmaceutically acceptable acid addition salt thereof.

3,879,463

SUBSTITUTED BUTADIENE AND HEXATRIENE PHOTOSENSITIZERS

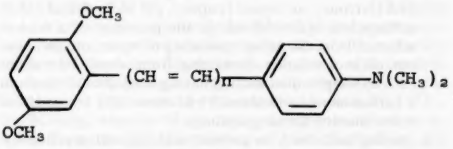
Gerret M. Peters, Jr., Meriden; Fred A. Stuber, North Haven, and Henri Ulrich, Northford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed May 10, 1973, Ser. No. 359,132

Int. Cl. C07c *93/14, 87/50, 43/20*

U.S. Cl. 260—571 **3 Claims**

1. A compound having the formula:



wherein *n* is an integer from 2 to 3.

3,879,464

CATIONIC SURFACE-ACTIVE AGENTS

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Mitry-Mory, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

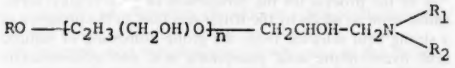
Continuation-in-part of Ser. No. 655,336, July 24, 1967, abandoned. This application Oct. 6, 1971, Ser. No. 187,151

Int. Cl. C07c *93/02*

U.S. Cl. 260—584 C **22 Claims**

1. A cationic surface-active agent comprising

1. a mixture of compounds having the formula



wherein R is selected from the group consisting of alkyl having 8–22 carbon atoms and alkenyl having 8–22 carbon atoms, R_1 and R_2 each independently are selected from the group consisting of lower alkyl having 1–4 carbon atoms and hydroxy lower alkyl having 1–4 carbon atoms and *n* has a statistical average value of 0.5–10.

3,879,465
AMINO ORTHOESTERS

Ibrahim S. Bechara, 1159 Naamans Creek Rd., Boothwyn, Pa. 19061, and Dewey G. Holland, Box 503-B, R.D. No. 1, Chadds Ford, Pa. 19317

Division of Ser. No. 276,976, Aug. 1, 1972, Pat. No. 3,786,029. This application Sept. 4, 1973, Ser. No. 393,722
Int. Cl. C07c *93/02*
U.S. Cl. 260—584 C **1 Claim**

1. An aminoorthoester in accordance with the formula

$$R—C(L)_x(OR')_{3-x}$$

where

R is a radical selected from the group consisting of hydrogen and an alkyl group of 1 to 4 carbon atoms,

L is $(OCHR''CH_2)_yN(R''')_2$,

x is an integer from 1 to 3,

y is an integer from 1 to 2,

R′ is an independently selected alkyl radical of 1 to 4 carbon atoms,

R″ is a radical independently selected from the group consisting of hydrogen, CH_3 and $CH_2N(CH_3)_2$, and

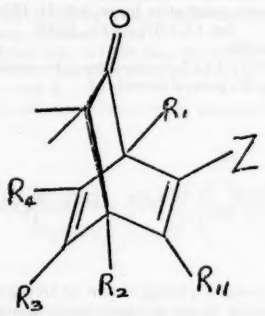
R‴ is a radical independently selected from the group consisting of an alkyl group of 1 to 2 carbon atoms.

3,879,466
BICYCLO-[2.2.2]OCTA-5,7-DIEN-2-ONES AND A PROCESS FOR THEIR PREPARATION

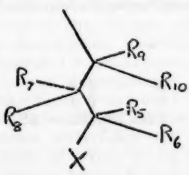
Kenneth K. Light, Asbury Park, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jan. 28, 1974, Ser. No. 436,847
Int. Cl. C07c *45/00, 49/54*
U.S. Cl. 260—586 C **22 Claims**

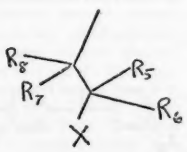
1. A compound having the structure:



wherein Z is a moiety selected from the group consisting of

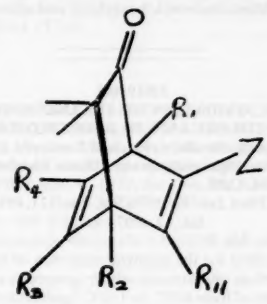


and

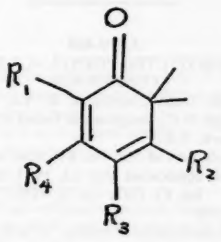


wherein each of R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} is the same or different and each represents a moiety selected from the group consisting of methyl and hydrogen; wherein R_{11} is selected from the group consisting of hydrogen, methyl and ethyl and wherein X is selected from the group consisting of bromo, chloro, hydroxyl, benzloxyl and alkoxyl.

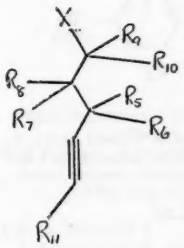
10. A process for producing a compound having the structure:



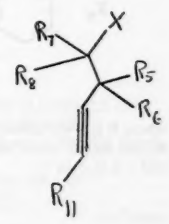
comprising the step of intimately admixing at a temperature of from 200°C. up to 260°C. and at autogeneous pressure a cyclohexadienone having the structure:



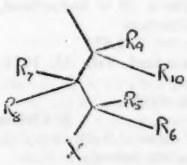
with an acetylenic compound selected from the group of compounds having the structures:



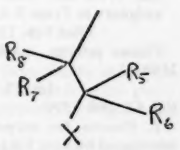
and



wherein Z is a moiety selected from the group consisting of



and



and wherein each of R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} is the same or different and each represents a moiety selected from the group consisting of methyl and hydrogen, wherein R_{11} is selected from the group consisting of hydrogen, methyl and ethyl and wherein X is selected from the group consisting of bromo, chloro, hydroxyl, benzyloxyl and alkoxyl.

3,879,467

CATALYTIC OXIDATION OF ALKANES AND ALKENES WITH ORGANIC HYDROPEROXIDES

John G. Zajacek, Strafford, Pa., and Lawrence J. Carr, Mayfield Heights, Ohio, assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 5, 1973, Ser. No. 321,499
Int. Cl. C07c *45/00*
U.S. Cl. 260—586 P **1 Claim**

1. The method for the catalytic oxidation of hydrocarbons to form alcohols and ketones which comprises contacting at a temperature of from 80°C. to 110°C., said hydrocarbon with liquid tertiary butyl hydroperoxide in the presence of from about 50 to about 10,000 ppm of chromium acetylacetonate and the hydrocarbon is selected from the group consisting of 2,3-dimethylbutane, cyclohexane, octane, n-butane, propane, and mixtures thereof.

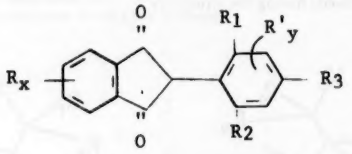
3,879,468

2-(POLY SUBSTITUTED PHENYL)-1,3-INDANDIONE COMPOUNDS

John A. Durden, South Charleston, W. Va., and Anthony A. Sousa, Raleigh, N.C., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 816,024, April 14, 1969, abandoned. This application May 13, 1971, Ser. No. 143,206
Int. Cl. C07c *49/76, 49/82*
U.S. Cl. 260—590 **6 Claims**

1. As new compositions of matter, 2-(polysubstituted phenyl)-1,3-indandione compounds of the formula:



where R is lower alkoxy or lower alkyl, R′ is lower alkoxy, R_1, R_2 and R_3 are lower alkyl, x is a positive integer from 1 to 4 and y is 0, 1 or 2.

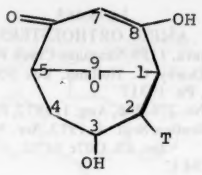
3,879,469

PROCESS FOR PREPARING 6,9-DIOXO-3,8-DIHYDROXY-2-SUBSTITUTED-BICYCLO-,3,1-NONENES-7

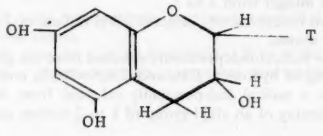
Andre Valenza, Nyon; Erno Horvath, Prangins; Pierre Courbat, Nyon, and Alban Albert, Geneva, all of Switzerland, assignors to Zyma S.A., Nyon, Switzerland

Filed Feb. 15, 1973, Ser. No. 332,871
Claims priority, application Switzerland, Feb. 23, 1972, 2590/72
Int. Cl. C07c *49/80, 49/82*
U.S. Cl. 260—590 **20 Claims**

1. Process for preparing a 6,9-dioxo 3,8-dihydroxy 2-substituted bicyclo 3,3,1-nonene-7 of the formula



wherein T is unsubstituted phenyl or hydroxy substituted phenyl, characterized in that a 2-substituted 3,5,7-trihydroxy 1,2-chroman of formula,



wherein T has the meaning set forth above, is reacted with alkali in an aqueous medium.

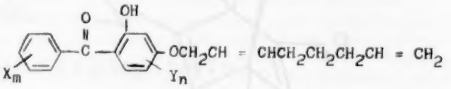
3,879,470

BENZOPHENONE DERIVATIVES AND A PROCESS FOR THE PRODUCTION

Hiroaki Munakata, Yokohama, and Naoshi Imaki, Kawasaki, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

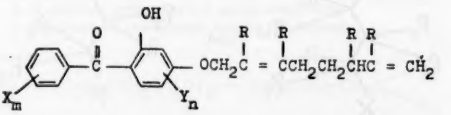
Filed July 30, 1973, Ser. No. 383,909
Claims priority, application Japan, July 31, 1972, 47-76732
Int. Cl. C07c *49/80, 49/82*
U.S. Cl. 260—591 **29 Claims**

1. A 2-hydroxy-4-(2,7-octadienyloxy) benzophenone compound having the general formula of



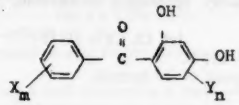
wherein X represents a halogen atom, an alkyl group containing 1 to 8 carbon atoms, an alkoxy group containing 1 to 4 carbon atoms, an alkoxyalkyl group containing 2 to 6 carbon atoms and an aryl group containing 6 to 8 carbon atoms, Y represents an alkyl group containing 1 to 8 carbon atoms, m is an integer of 0, 1 and 2 and n is an integer of 0 and 1.

4. A process for producing a 2-hydroxy-4-alkadienyloxybenzophenone compound having the formula of

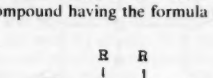


wherein X represents a halogen atom, an alkyl group containing 1 to 8 carbon atoms, an alkoxy group containing 1 to 4 carbon atoms, an alkoxyalkyl group containing 2 to 6 carbon atoms and an aryl group containing 6 to 8 carbon atoms, Y represents an alkyl group containing 1 to 8 carbon atoms, R

represents a hydrogen atom and methyl group, *m* is an integer of 0, 1 and 2 and *n* is an integer of 0 and 1, which comprises reacting a 2,4-dihydroxybenxophenone compound having the formula of



wherein X, Y, *m* and *n* have the same meaning as above, with a 1,3-diene compound having the formula of



wherein R has the same meaning as above, in the presence of a palladium catalyst selected from the group consisting of an inorganic palladium salt, an aliphatic carboxylate of palladium, an aromatic carboxylate of palladium, a palladium chloride complex salt, a palladium chelate compound, an organic palladium salt complex containing at least one neutral ligand, an inorganic palladium salt complex containing at least one neutral ligand, a π-allyl palladium complex and a zero valent palladium complex.

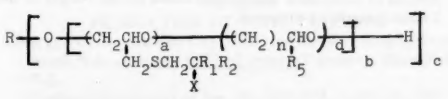
3,879,471

POLYETHERS HAVING β-HALOTHIOETHER SIDE CHAINS

Hugh A. Farber, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 1, 1969, Ser. No. 846,950
Int. Cl. C07c *149/14*
U.S. Cl. 260—609 R **3 Claims**

1. The polyether represented by the general statistical formula:



wherein R is hydrogen or the residue of an organic active hydrogen initiator selected from the group consisting of methanol, ethanol, 2-butanol, 1-octanol, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol, propylene glycol, 1,3-butanediol, 1,4-butanediol, glycerol, sorbitol, polyethylene glycols, polypropylene glycols, polybutylene glycols, dihydroxypropyl ether of bisphenol A, ethylene chlorohydrin, glycerol dichloride, phenol, xylenol, p-chlorophenol, resorcinol, hydroquinone, phloroglucinol, bisphenol A, bis-p-hydroxyphenyl methane, sucrose, glucose, fructose, and maltose; R_1 and R_2 are individually hydrogen, alkyl having from 1 to 12 carbon atoms, aryl having from 6 to 12 carbon atoms, hydroxyalkyl having from 2 to 12 carbon atoms, aryloxyalkyl with aryl having from 6 to 12 carbon atoms, or alkoxy having from 1 to 12 carbon atoms; X is chloro or bromo; R_5 is alkyl having from 1 to 4 carbon atoms and substituted alkyls thereof selected from the group consisting of haloalkyl, mercaptoalkyl, alkoxyalkyl ∨ herein alkoxy has from 1 to 20 carbon atoms, aryloxyalkyl wherein aryloxy has from 6 to 20 carbon atoms, and alkyl thioalkyl wherein alkylthio has from 1 to 20 carbon atoms, and aryls having from 6 to 12 carbon atoms and substituted aryls thereof selected from the group consisting of haloaryl, mercaptoaryl, alkoxyaryl, and aryloxyaryl; *a* is a positive integer and *d* is O or a positive integer provided that the ratio of *a* to *d* is from about 1:8 to 1:0; and b is a positive integer from 1 to 125; c is a positive integer from 1 to 8; and *n* is a positive integer from 1 to 4, said polyether having a molecular weight from about 300 up to about 15,000.

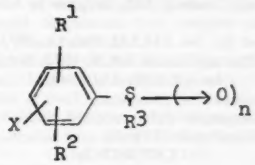
3,879,472

(SUBSTITUTED DIALKYLPHENYL) ALKYL SULFIDES, SULFOXIDES AND SULFONES

Elmore Louis Martin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 6, 1973, Ser. No. 394,825
Int. Cl. C07c *147/06*
U.S. Cl. 260—609 F **5 Claims**

1. The compounds having the structure



wherein

R^1 and R^2, alike or different, are alkyl of 2 to 7 carbon atoms in which there are no more than 3 carbons in a line from the aromatic ring;

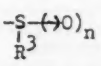
R^3 is an alkyl of 1 to 3 carbon atoms;

n is 0, 1 or 2; and

X is F, Cl, Br, or I;

with the provisos that:

1. R^1 and R^2 are not ortho to each other,
2. at least one of R^1 and R^2 contains at least 3 carbon atoms, and
3. X is not ortho to the



group.

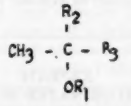
3,879,473

PREPARATION OF ETHERS FROM ALCOHOLS AND OLEFINS CATALYZED BY IODINE

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1973, Ser. No. 388,140
Int. Cl. C07c *41/10*
U.S. Cl. 260—614 A **6 Claims**

1. A process for the preparation of ethers having the general formula



wherein R_1 is an alkyl group having from one to six carbon atoms and R_2 and R_3 are individually selected from the group consisting of hydrogen and alkyl or cycloalkyl groups having up to six carbon atoms,

which comprises contacting an alcohol having the general formula

$R_1 - OH$

wherein R_1 is as defined hereinbefore, with a 1-olefin having the general formula

$$CH_2 = C - R_3$$
$$\quad\quad |$$
$$\quad\quad R_2$$

wherein R_2 and R_3 are as defined hereinbefore,
in the presence of elemental iodine as catalyst at a temperature from 25° to 400°C under autogenous pressure.

3,879,474

INHALANT ANALGESIC AND ANESTHETIC COMPOSITION

Louise S. Croix, Summit, N.J., assignor to Airco, Inc., New York, N.Y.

Division of Ser. No. 314,222, Dec. 11, 1971, Pat. No. 3,806,602. This application Oct. 9, 1973, Ser. No. 404,816

Int. Cl. C07c *43/00, 43/12*

U.S. Cl. 260—614 F **1 Claim**

1. The compound difluoromethyl dichlorofluoromethyl ether represented by the formula:

$$CHF_2OCFCl_2$$

3,879,475

METHOD FOR THE PREPARATION OF BIODEGRADABLE GLYCIDOL SURFACTANTS

John A. Wojtowicz, Cheshire, Conn., and Milton Lapkin, Barrington, R.I., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 27,107, April 9, 1970, Pat. No. 3,719,636. This application Jan. 10, 1973, Ser. No. 322,340

Int. Cl. C07c *43/04*

U.S. Cl. 260—615 B **7 Claims**

1. The method for preparing surfactants comprising reacting:

a. an aliphatic alcohol having the formula:

$$R - \underset{\underset{Y}{|}}{CHCH_2OH}$$

wherein R is a linear aliphatic hydrocarbon containing 6 to 24 carbons and *y* is a hydrogen or hydroxyl group with

b. glycidol

in the presence of a polar, non-reactive and miscible solvent selected from the group consisting of:

i. dialkyl ethers and dialkyl ethers of alkylene glycols having 3 to 12 carbons,

ii. dioxane and

iii. pyran

and a Lewis acid catalyst at a temperature of from about 25° to about 125°C, said glycidol and alcohol being present in a ratio of 4:1 to 14:1 moles of glycidol per mole of alcohol.

3,879,476

HERBICIDAL CHLORINATED BENZYL ALCOHOLS

Joseph Deli, and Jerome M. Lavanish, both of Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 20, 1972, Ser. No. 264,684

Int. Cl. C07c *35/00*

U.S. Cl. 260—618 D **1 Claim**

1. The compound 1-chloromethyl 2',4',6'-triisopropylbenzyl alcohol.

3,879,477

MONOHYDROXYPHENYL CARBINOLS

Max Schellenbaum, Muttenz; Max Duennenberger, Frenkendorf, and Fulvio Casagrande, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

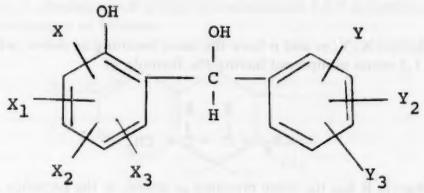
Filed July 20, 1971, Ser. No. 164,446

Claims priority, application Switzerland, July 23, 1970, 11172/70

Int. Cl. C07c *39/12*

U.S. Cl. 260—619 R **8 Claims**

1. A compound of the formula



wherein X is halogen; X_1, X_2 and X_3 are each hydrogen or halogen; Y is hydrogen, halogen or methyl; and Y_2 and Y_3 are each hydrogen or halogen; and wherein at least two of X_1, X_2, X_3, Y, Y_2 and Y_3 are not hydrogen.

3,879,478

NON-CAKING COMPOSITION OF 2-NITRO-2-METHYL--PROPANOL

Ollie W. Chandler, Terre Haute, and Richard S. Egly, West Terre Haute, both of Ind., assignors to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Feb. 23, 1972, Ser. No. 228,764

Int. Cl. C07c *31/02*

U.S. Cl. 260—632.5 **2 Claims**

1. A non-caking pelleted composition consisting of 2-nitro-2-methyl-1-propanol blended with from about 0.5 to about 5 percent of particulate stearic acid based on the weight of the 2-nitro-2-methyl-1-propanol.

3,879,479

PROCESS FOR PREPARING 1,2,3-TRICHLOROPROPENE

Lowell R. Smith, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 17, 1971, Ser. No. 210,111

Int. Cl. C07c *21/04*

U.S. Cl. 260—654 H **4 Claims**

1. A continuous process for producing 1,2,3-trichloropropene which comprises:

1. heating a mixture of 2-chloropropene and 2,3-dichloropropene in a weight ratio of from 0.2:1 to 0.6:1, respectively, to above its vaporization temperature,
2. admixing said mixture with chlorine in an amount whereby the weight ratio of chlorine to the mixture of chloropropenes is from 0.10:1 to 0.30:1,
3. maintaining the admixture of (2) at a temperature of from about 460° to 500°C. for from about 0.2 to 0.4 seconds, whereby 1,2,3-trichloropropene is formed and a portion of the 2-chloropropene and 2,3-dichloropropene remains,
4. separating the 1,2,3-trichloropropene from the 2-chloropropene and 2,3-dichloropropene,
5. recycling the 2-chloropropene and 2,3-dichloropropene as components in the mixture of (1).

3,879,480

VINYL CHLORIDE PROCESS

Herbert Riegel, Maplewood, N.J., and Harvey D. Schindler, New York, N.Y., assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 688,724, Dec. 7, 1967. This application Nov. 23, 1970, Ser. No. 92,126

Int. Cl. C27c *21/02*

U.S. Cl. 260—656 R **14 Claims**

1. A continuous process for producing vinyl chloride, comprising:

a. introducing a melt containing a multivalent metal chloride into a first reaction zone positioned in the top portion of a reactor;

b. introducing molecular oxygen into the first reaction zone, said oxygen contacting the melt to effect oxidation thereof and produce the oxychloride of the metal;

c. passing the melt, by gravity, from the first reaction zone into a second reaction zone positioned in the intermediate portion of the reactor;

d. introducing a gaseous member selected from the group consisting of chlorine, hydrogen chloride and mixtures thereof and a gaseous member selected from the group consisting of ethane, ethylene and mixtures thereof into the second reaction zone to contact said melt to produce a first gaseous effluent containing vinyl chloride and dichloroethane;

e. withdrawing the first gaseous effluent from the second reaction zone and recovering vinyl chloride and dichloroethane therefrom;

f. withdrawing the melt from the second reaction zone and passing the melt, by gravity, into a third reaction zone positioned in the bottom of the reactor;

g. introducing dichloroethane recovered in step (e) into the third reaction zone, said dichloroethane contacting the melt to produce a second gaseous effluent containing vinyl chloride;

h. withdrawing the second gaseous effluent from the third reaction zone and recovering vinyl chloride therefrom; and

i. passing melt withdrawn from the third reaction zone to step (a).

3,879,481

PRODUCTION OF VINYL CHLORIDE

Morgan C. Sze, Garden City, N.Y., and Herbert Riegel, Maplewood, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 630,079, April 11, 1967, abandoned, and a continuation-in-part of Ser. No. 831,414, June 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 614,338, Feb. 6, 1967, abandoned. This application Dec. 4, 1970, Ser. No. 95,030

Int. Cl. C07c *21/02*

U.S. Cl. 267—656 R **17 Claims**

1. A process for producing vinyl chloride comprising:

a. contacting a hydrocarbon selected from the group consisting of ethane, ethylene and mixtures thereof and a member selected from the group consisting of chlorine, hydrogen chloride and mixtures thereof with a melt containing a multivalent metal chloride in both its higher and lower valence state and the oxychloride of the metal to produce a chlorinated hydrocarbon-containing effluent including vinyl chloride, ethyl chloride, dichloroethane and other chlorinated hydrocarbons selected from the group consisting of dichloroethylenes, tetrachloroethane, tetrachloroethylene, trichloroethane, trichloroethylene and mixtures thereof;

b. recovering vinyl chloride, ethyl chloride, dichloroethane and the other chlorinated hydrocarbons from the chlorinated hydrocarbon-containing effluent;

c. contacting recovered dichloroethnae with a melt containing a multivalent metal chloride in both its higher and lower valence state to produce a reaction effluent containing vinyl chloride;

d. burning at least a portion of the recovered said other chlorinated hydrocarbons from step (b) to produce a combustion effluent containing a member selected from the group consisting of chlorine, hydrogen chloride and mixtures thereof and in addition carbon oxides, nitrogen and water vapor;

e. contacting the combustion effluent and a molecular oxygen-containing gas with melt from step (c), resulting in absorption of the member from the combustion effluent by addition of chlorine to the melt and the production of the metal oxychloride; and

f. employing at least a portion of the melt from step (e) in step (a).

3,879,482

VINYL CHLORIDE PROCESS

Herbert Riegel, Maplewood, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 831,414, June 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 614,338, Feb. 6, 1967, abandoned, and a continuation-in-part of Ser. No. 769,811, Oct. 23, 1968, abandoned. This application June 28, 1971, Ser. No. 157,496

Int. Cl. C07c *21/02*

U.S. Cl. 260—656 R **40 Claims**

1. A process for producing vinyl chloride comprising:

a. contacting, in the vapor phase ethane and a member selected from the group consisting of hydrogen chloride, chlorine and mixtures thereof as fresh feed and unconverted ethane, ethyl chloride and ethylene as recycle components with a molten mixture comprising a multivalent metal chloride in both its higher and lower valence state and the oxychloride of the metal, to produce a reaction effluent comprising vinyl chloride, dichloroethane and said recycle components;

b. recovering from the reaction effluent the vinyl chloride, dichloroethane and said recycle components; and

c. passing recovered recycle components to step (a).

3,879,483

PROCESS FOR THE MANUFACTURE OF VINYLCYCLOALKANES

Noel Vanlautem, Brussels, Belgium, and Alain Donzel, Orbe, Switzerland, assignors to Solvay & Cie, Brussels, Belgium

Filed Mar. 26, 1974, Ser. No. 454,801

Claims priority, application France, Mar. 26, 1973, 10853; Switzerland, Apr. 16, 1973, 5843/73

Int. Cl. C07b *17/00*; **C07c** *3/00*

U.S. Cl. 260—666 A **14 Claims**

1. A process for the manufacture of vinylcycloalkanes of the formula $R\text{-}CH{=}CH_2$, wherein R represents a cycloaliphatic radical with 5 or 6 carbon atoms which can be substituted by substituents selected from the group consisting of alkyl groups containing 1 to 6 carbon atoms and saturated chains containing 1 to 6 carbon atoms and a hetero-atom selected from the group consisting of sulfur, oxygen and nitrogen, the process comprising reacting vinyl chloride with an organometallic compound $(R)_n\text{-}M$, wherein R is defined as above, M represents a lithium atom, a cadmium atom or a magnesium-halogen group, and n is equal to 1 when M represents lithium or the magnesium-halogen group and equal to 2 when M represents cadmium, in the presence of a catalyst consisting of a metal from Group VIII of the Periodic Table or a compound of a metal from Group VIII of the Periodic Table and at least one compound of an element selected from the group consisting of Group VA and Group VIA of the Periodic Table of the Elements which is complexed with the metal or the compound of a metal from Group VIII.

3,879,484

HYDROCARBON ISOMERIZATION PROCESS

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 802,207, Feb. 25, 1969, Pat. No. 3,679,602, which is a continuation-in-part of Ser. No. 723,886, April 24, 1968, abandoned. This application Oct. 1, 1970, Ser. No. 77,329

Int. Cl. C07c *5/24*

U.S. Cl. 260—668 A **12 Claims**

1. A process for isomerizing an isomerizable alkylaromatic hydorcarbon which comprises contacting said hydrocarbon with a catalytic composite of alumina having combined therewith a platinum group metallic component, a halogen component, and a rhenium component at isomerization conditions including a temperature of about 0° C. to about 600° C., a pressure of about atmospheric to about 100 atmospheres, a liquid hourly space velocity of about 0.1 to about 20.0 $hr.^{-1}$, and a hydrogen to hydrocarbon mole ratio of about 0.5:1 to about 20:1.

3,879,485

METHOD OF PRODUCING BUTENE-1

Gennady Petrovich Belov, p/o Chernogolovk, ulitsa Pervaya, 5, kv. 15; Taimuraz Savelievich Dzhabiev, p/o Chernogolovka, ulitsa Pervaya, 31, kv. 41; Fridrikh Stepanovich Dyachkovsky, p/o Chernogolovka, ulitsa Tretya, 3, kv. 2; Vyacheslav Ivanovich Smirnov, p/o Chernogolovka, ulitsa Tretya, 1, kv. 19; Nelli Dzhavkharovna Karpova, p/o Chernogolovka, ulitsa Pervaya, 29, kv. 100; Khaim-Mordkhe Aronovich Brikenshtein, p/o Chernogolovka, ulitsa Vtoraya, 5, kv. 1; Matrena Petrovna Gerasina, p/o Chernogolovka, ulitsa Pervaya, 2a, kv. 61, all of Moskovskaya oblast, Noginsky raion; Vladimir Evgenievich Kuzmin, ulitsa 50 letiya Oktyabrya, 13/12 kv. 199, Kazan; Petr Evgenievich Matkovsky, p/o Chernogolovka, ulitsa Pervaga, 16, kv. 26, Moskovskaya oblast, Noginsky raion; Ljudmila Nikolaevna Russiyan, p/o Chernogolovka, ulitsa Pervaya, 2a, kv. 41, Moskovskaya oblast, Norginsky raion; Anatoly Dmitrievich Pomogailo, p/o Chernogolovka, ulitsa Pervaga, 33, kv. 15, Moskovskaya oblast, Noginsky raion, all of U.S.S.R., and Nikolai Mikhailovich Chirkov, deceased, late of ulitsa Vavilova, 55/5, kv. 6, Moscow, U.S.S.R. (Mikhail Nikolaevish Chirkov, administrator)

Filed Jan. 25, 1974, Ser. No. 436,809

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D **1 Claim**

1. A method of producing butene-1, residing in that ethylene is dimerized to butene-1 in the presence of a complex organometallic catalyst consisting of titanium alcoholates of the formula $(RO)_3TiR'AlR_2''OR$ and alkylaluminum of the formula $AlR_2''R'$, where R is an alkyl radical with the number of carbon atoms from 2 to 4, R′ = R or H, R″ is the same as R, in the medium of hydrocarbon solvents selected from the group consisting of n-heptane, n-decane and toluene.

3,879,486

CONVERSION OF NON-CYCLIC C_3-C_5 ALKANES AND ALKENES TO AROMATIC HYDROCARBONS

Maurice M. Mitchell, Jr., Wallingford, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 324,720, Jan. 18, 1973. This application Sept. 24, 1973, Ser. No. 400,298

Int. Cl. C07c *5/26*

U.S. Cl. 260—673 **5 Claims**

1. In the method for the single stage conversion of non-cyclic C_3-C_5 alkenes or mixtures of alkenes and alkanes to aromatic hydrocarbons having twice the number of carbon atoms as the alkene or mixtures of alkene and alkane which is converted wherein said alkene or mixture of alkene and alkane is contacted with a physical admixture of particles of supported bismuth oxide dehydrodimerization agent and particles of a chromia-alumina catalyst said contacting being at a temperature in the range of from 400°C. to 650°C., the improvement comprising employing an essentially non-segregating particulate admixture of said supported bismuth oxide and said chromia-alumina at a weight ratio of supported bismuth oxide to chromia-alumina of about 1:1 said supported bismuth oxide particles and chromia-alumina particles being of substantially the same density and having a mesh size of from 20 to 50 and wherein the weight ratio of chromia-alumina to bismuth oxide alone is about 8.4:1 to 4.6:1.

3,879,487

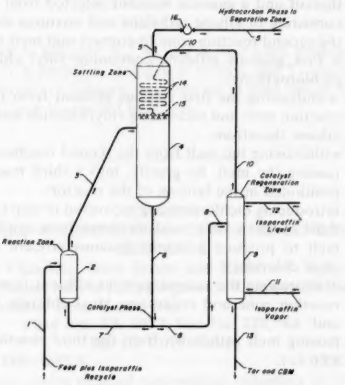
HYDROGEN FLUORIDE ALKYLATION UTILIZING A HEAT EXCHANGER IN THE SETTLING ZONE

Bipin V. Vora, Buffalo Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 15, 1974, Ser. No. 461,080

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.48 **10 Claims**

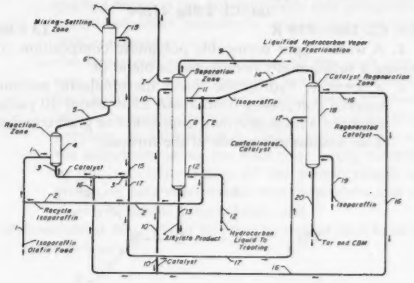


1. In an alkylation process wherein:
   a. a feed comprising an olefin-acting hydrocarbon and an alkylatable hydrocarbon is contacted with hydrogen fluoride alkylation catalyst at alkylation reaction conditions in a reaction zone;
   b. a reaction zone effluent is separated in a settling zone into a hydrocarbon phase and a catalyst phase;
   c. a first portion of said catalyst phase is withdrawn from said settling zone and is returned to said reaction zone;
   d. a second portion of said catalyst phase is passed to a catalyst regeneration zone;
   e. an admixture comprising catalyst vapors and alkylatable hydrocarbon vapors is withdrawn from said catalyst regeneration zone and is passed to a condenser;
   f. said admixture of vapors is condensed in said condenser and discharged into said settling zone; the improvement which comprises passing said admixture of vapors to the inlet of heat exchange means situated within said settling zone, said heat exchange means commicating with said settling zone through an outlet; passing said admixture of vapors through said heat exchange means; withdrawing heat from said admixture of vapors and thereby condensing said admixture of vapors within said heat exchange means; passing said condensed vapors through said outlet and into said settling zone; said hydrocarbon phase in said settling zone absorbing said heat withdrawn from said admixture of vapors

3,879,488
SEPARATE RECYCLE OF REGENERATED ACID AND OF ISOPARAFFIN FROM HF CATALYST REGENERATION ZONE

Robert F. Anderson, La Grange Park, and Bipin V. Vora, Buffalo Grove, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 17, 1974, Ser. No. 461,761
Int. Cl. C07c *3/52*
U.S. Cl. 260—683.48 **5 Claims**



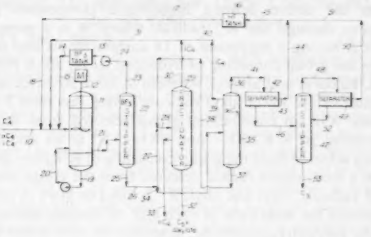
1. An alkylation process comprising:
a. contacting a feed comprising an olefin and an isoparaffin with hydrogen fluoride alkylation catalyst at alkylation reaction conditions in a reaction zone;
b. separating a reaction zone effluent into a hydrocarbon phase and a catalyst phase;
c. returning a first portion of said catalyst phase to said reaction zone;
d. passing a second portion of said catalyst phase to a catalyst regeneration zone to remove tar and constant boiling mixture of water and hydrogen fluoride from said acid phase;
e. passing said hydrocarbon phase to a separation zone to separate unreacted isoparaffin and to withdraw an alkylate product;
f. mixing said unreacted isoparaffin from step (e) with said feed prior to introducing said feed into said reaction zone;
g. separating a mixture of regenerated acid and isoparaffin from said catalyst regeneration zone;
h. condensing said mixture into regenerated acid and isoparaffin; and
i. recycling said regenerated acid to said reaction zone in step (a) and mixing said isoparaffin from step (h) with said feed in step (a).

3,879,489
ISOPARAFFIN-OLEFIN ALKYLATION WITH A CATALYST COMPLEX OF A CATION EXCHANGE RESIN, BF_3 AND HF

Sergei Yurchak, Washington Crossing, Pa., and Joseph N. Miale, Trenton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,362
Int. Cl. C07c *3/52*
U.S. Cl. 260—683.44 **10 Claims**

1. A process for alkylating an isoparaffin having from 4 to 8 carbon atoms with an olefin containing from 2 to 12 carbon atoms by contacting the same in the liquid state in a reaction zone maintained at a temperature between about −20°C. and 150°C. under conditions such that the molar ratio of said isoparaffin to said olefin is between about 2 and about 50 and in the presence of a catalyst complex comprising a cation exchange resin containing acid groups, boron trifluoride and hydrogen fluoride, said resin consisting essentially of a macroreticular acid cation exchange resin characterized by a water content between about 0.5 and about 20 weight percent and a surface acid concentration of 0.001 to about 0.5 milliequivalents of hydrogen ion per square meter surface area, said boron trifluoride being present in said catalyst complex in an amount of at least about 0.1 equivalent per equivalent of said resin acid groups but not in excess of that required to saturate



said resin and said hydrogen fluoride being present in said catalyst complex in an amount between about 0.1 and about 10 equivalents per equivalent of said resin acid groups, withdrawing a hydrocarbon product mixture from said reaction zone and separating an alkylate hydrocarbon product from said mixture.

3,879,490
INHERENTLY MOLD-RELEASABLE MOLD OR CASTING COMPOSITION

Jose L. Villa, Heightstown, N.J., assignor to Thiokol Corporation, Bristol, Pa.

Division of Ser. No. 356,976, May 3, 1973, Pat. No. 3,838,110. This application Sept. 10, 1974, Ser. No. 504,783
Int. Cl. C08G *45/04*
U.S. Cl. 260—836 **11 Claims**

1. A mold, which requires no mold release agent, in which at least the surface that contacts a casting composition comprises a cured fluorocarbon-containing polyether prepared from polyepoxides having epoxide functionality of approximately two epoxide groups per molecule and an hydroxyl terminated polymer; wherein said hydroxyl-terminated polymers contain pendant vinyl or allyl groups and wherein at least some of said pendant groups are converted to 2-perfluoroalkyl-1-iodoethyl groups or 3-perfluoroalkyl-2-iodopropyl groups to provide a fluorine content of from 1 to 40 percent.

3,879,491
TOUGHENED THERMOPLASTICS CONTAINING POLYDIORGANOSILOXANES

Sarah E. Lindsey, and John C. Saam, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 249,327, May 1, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 417,990
Int. Cl. C08f *33/08*; **C08g** *47/10*
U.S. Cl. 260—827 **8 Claims**

1. A toughened thermoplastic composition having values for notched Izod impact strengths in foot pounds per inch of notch wherein the notch is 45 degrees and 0.1 inch deep at least 35 percent greater than unmodified thermoplastic wherein the thermoplastic in the toughened thermoplastic composition is the same as the unmodified thermoplastic, consisting essentially of a continuous matrix of a thermoplastic wherein the unpolymerized monomeric compounds were selected from the group consisting of styrene, methylmethacrylate, ring substituted alkyl styrenes, mixtures thereof, and mixtures of at least one monomer selected from the group consisting of styrene, methylmethacrylate and ring substituted alkyl styrenes with at least one monomer selected from the group consisting of acrylonitrile, alpha-methylstyrene, maleic

anhydride, methacrylonitrile, acrylic acid, vinyl halides and vinylidene halides, having dispersed therein gelled particles which have a range of diameters from 0.05 micron to 200 microns inclusive, where the geometric mean diameter is from 0.3 micron to 20 microns inclusive, said gelled particles consisting essentially of polydiorganosiloxane of the formula $X[(R_2SiO)_{mRR''siom-m}]_xX'$ having polymeric species derived from the above defined monomeric compounds grafted thereto through the R'' radical, where R is a monovalent radical having a maximum of 18 carbon atoms and selected from the group consisting of hydrogen atom, alkyl, haloalkyl, aryl, haloaryl and aralkyl, wherein at least 50 percent of the R radicals are lower alkyl radicals having less than 3 carbon atoms, X is an endblocking group selected from the group consisting of $R'R_2SiO-$ and HO—, X' is an endblocking group selected from the group consisting of $R'R_2Si-$ and H—, R' is a monovalent radical selected from the group consisting of R radicals, vinyl and allyl, R'' is vinyl or allyl, m and $1-m$ represent the mole ratio of each type of diorganosiloxane unit in the polydiorganosiloxane, respectively, and m has a value from 0.75 to 0.85 inclusive, x represents the total number of diorganosiloxane units in the polydiorganosiloxane and has a value sufficient to provide a Williams plasticity of at least 0.060 inch as determined on the unreacted polydiorganosiloxane, the polydiorganosiloxane being present in an amount of from 1 to 15 weight percent based on the total combined weight of the thermoplastic and the polydiorganosiloxane, said toughened thermoplastic composition being prepared by polymerizing with agitation at 35°C. to 200°C. by free radical means, the monomeric compounds described above in which the unreacted polydiorganosiloxane is dispersed.

3,879,492

HEAT-SEALABLE FILM CAPABLE OF FORMING PEELABLE SEALS

Walter Bontinick, Saint Martens-Leerne, Belgium, assignor to UCB, S.A., Saint-Gilles-lez-Bruxelles, Belgium

Filed May 15, 1972, Ser. No. 253,113

Claims priority, application United Kingdom, May 18, 1971, 15587/71

Int. Cl. C08g 41/04

U.S. Cl. 260—857 D **5 Claims**

1. A wrapping film capable of forming peelable seals comprising about 20 to about 80% by weight of a heat-sealable rigid polymer (A) which, in film form, has an elasticity modulus in excess of 3,000 kg/cm², measured according to ASTM D 882-67 standard, said polymer (A) being polyethylene having a density in excess of 0.94, polypropylene, polybutene or a physical mixture of said polyethylene with polyamide or polyvinyl chloride in which the weight ratio of polyethylene to polyamide or polyvinylchloride is about 6:1, about 0.1 to about 50% by weight of a non-heat-sealable polymer (B), which does not form a solution with polymer (A), said polymer (B) being a styrene-butadiene copolymer, about 0.1 to about 30% by weight of a heat-sealable branched chain polymer (C) which, in film form, has an elasticity modulus below 3,000 measured according to ASTM D 882-67 standard, said polymer (C) being a polyethylene having a density between 0.915 and 0.935 and 0 to about 45% by weight of a polymer (D) compatible with polymers (A), (B) and (C), said polymer (D) being an ethylene-alkylacrylate copolymer, wherein the alkyl group contains 1–4 carbon atoms, an ethylene-vinylacetate copolymer or a previously prepared mixture of polyethylene with polyisobutylene, the sum of the polymers (A), (B), (C) and (D) representing 100% by weight of the polymeric material of the film.

3,879,493

VAPOR PERMEABLE COMPOSITIONS

John P. Mudde, Oak Lawn, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

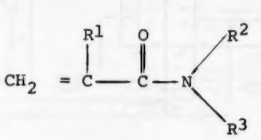
Division of Ser. No. 359,284, May 11, 1973, Pat. No. 3,792,009, which is a continuation-in-part of Ser. No. 266,038, June 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 244,251, April 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 226,202, Feb. 14, 1972, which is a continuation-in-part of Ser. No. 122,148, March 8, 1971, abandoned. This application Oct. 26, 1973, Ser. No. 410,121

Int. Cl. C08g 41/04

U.S. Cl. 260—859 R **13 Claims**

1. A water vapor permeable polymeric composition comprising a substantially homogeneous blend of:

a. a normally hydrophilic linear thermoplastic polymeric material comprising from about 25 to about 40 parts by weight of a homopolymer, copolymer or graft copolymer of an unsaturated amide of the formula:



wherein R^1 is selected from the group consisting of hydrogen and alkyl of up to 4 carbon atoms; R^2 and R^3 are alkyl of up to 4 carbon atoms, said copolymer or graft copolymer being comprised of at least 75% by weight of said amide; and

b. a normally hydrophobic polymeric material comprising from about 75 to about 60 parts by weight of a polyurethane, the combined weights of said normally hydrophilic and hydrophobic polymeric materials being 100 parts by weight,

said polymeric composition being capable of producing continuous films and foams having improved water vapor transmission properties.

3,879,494

POLYBLENDS OF CHEMICALLY JOINED, PHASE SEPARATED THERMOPLASTIC GRAFT COPOLYMERS

Ralph Milkovich, Naperville; Mutong T. Chiang, Palos Heights, and Gerald O. Schulz, Downers Grove, all of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116, which is a continuation-in-part of Ser. No. 244,205, April 14, 1972, Pat. No. 3,832,423, which is a continuation-in-part of Ser. No. 117,733, Feb. 22, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 433,314

Int. Cl. C08f 41/12, 37/18, 29/24

U.S. Cl. 260—876 R **20 Claims**

1. A polyblend comprising:

A. from about 1 to about 50 parts by weight of a chemically joined, phase separated thermoplastic graft copolymer comprising:

1. from about 1 percent to about 95 percent by weight of polymerizable macromolecular monomers having a substantially uniform molecular weight distribution, and

2. from about 99 percent to about 5 percent by weight of a copolymerizable comonomer forming the polymeric backbone of said graft copolymer and said polymerizable macromolecular monomers forming linear polymeric sidechains of said graft copolymer, wherein:

a. the polymeric backbones of the graft copolymer are comprised of polymerized units of said copolymerized comonomer, said copolymerizable comonomer being at least one ethylenically unsaturated monomer and mixtures thereof:

b. the linear polymeric sidechains of the graft copolymer are comprised of copolymerized macromolecular monomers, said macromolecular monomers comprising linear polymers or copolymers having a molecular weight in the range from about 5,000 to about 50,000 and having a substantially uniform molecular weight distribution, such that their ratio of Mw/Mn is less than about 1.1, said macromolecular monomers being further characterized as having no more than one polymerizable moiety per linear polymer of copolymer chain, said copolymerization occurring between the polymerizable end group of said macromolecular monomers and said copolymerizable comonomer; and

c. the linear polymeric sidechains of the graft copolymer which are copolymerized into the copolymeric backbone are separated by at least about 20 uninterrupted recurring monomeric units of said backbone polymer, the distribution and copolymerization of the sidechains along the backbone being controlled by the reactivity ratios of the polymerizable end group on said macromolecular monomers and said copolymerizable comonomer; and

B. from about 99 to about 50 parts by weight of at least one other polymer.--;

3,879,495

IMPACT-RESISTANT RUBBER-MODIFIED PLASTICS AND PROCESS FOR PRODUCING THE SAME

Yoshikazu Fujii, Ibaragi; Yasuyuki Kato; Masahiko Moritani, and Hiroaki Maruyama, all of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

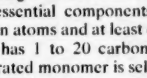
Filed Nov. 14, 1973, Ser. No. 416,266

Claims priority, application Japan, Nov. 17, 1972, 47-115848; Nov. 17, 1972, 47-115857

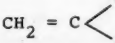
Int. Cl. C08f *15/00*

U.S. Cl. 260—878 R **25 Claims**

1. A process for producing an impact-resistant, rubber-modified, plastic material, which comprises polymerizing 40 to 99 parts by weight of at least one ethylenically unsaturated monomer (II) capable of forming a plastic material having a glass transition temperature of 10°C or higher, in the presence of 1 to 60 parts by weight of an olefin-acrylate copolymer (I) comprising as the essential components at least one olefin having 3 to 20 carbon atoms and at least one acrylate in which the alcohol moiety has 1 to 20 carbon atoms, wherein the ethylenically unsaturated monomer is selected from the group consisting of vinyl and vinylidene compounds having the formula,



wherein Y and Z are independently hydrogen, —R, —COOR,



—COX, —COOH, —COR, —OR, —OCOR or —CN, in which R is a hydrocarbon group of a hydrocarbon group or a hydrocarbon group containing at least one atom selected from the group consisting of oxygen and nitrogen, and R′ and R″ are independently a hydrocarbon group.

3,879,496

LOW RUBBER, HIGH-FLOW AND HIGH IMPACT ABS PLASTICS, IMPROVED RUBBER TOUGHENER FOR PRODUCING SAME, AND METHOD OF MANUFACTURE

Thomas R. Paxton, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of Ser. No. 142,740, May 12, 1971, abandoned. This application Apr. 13, 1972, Ser. No. 241,063

Int. Cl. C08f *19/08, 41/04*

U.S. Cl. 260—880 R **10 Claims**

1. In a method of preparing an ABS toughener by graft overpolymerizing SAN monomers onto the latex particles of a butadiene-1,3 synthetic rubber, the improvement which comprises (1) associating said synthetic rubber latex particles with latex particles of a hard, crosslinked copolymer resin produced by polymerizing a monomeric mixture comprising at least 60%/wt. of a vinyl aromatic hydrocarbon, not more than about 39.5%/wt. of one or more monovinylidene monomers copolymerizable with said monovinyl aromatic hydrocarbon in aqueous dispersion, and from about 0.5% to about 4%/wt. of a crosslinking monomer copolymerizable with said monovinyl aromatic hydrocarbon in aqueous dispersion and containing at least two nonconjugated monovinylidene $CH_2 = C<$ groups per molecule, said particles of hard, crosslinked copolymer averaging between about 150 and about 800 A in diameter and the weight ratio rubber:copolymer resin in the resulting latex product being between about 15:1 to about 8:1, (2) agglomerating the said step (1) rubber:copolymer resin latex to produce a latex containing enlarged particles averaging between about 1000 and 3000 A in diameter; (3) adding SAN monomers to the resulting agglomerated step (2) latex and (4) effecting graft overpolymerization in the resulting aqueous dispersion of SAN resin on the agglomerated rubber:resin particles to produce a final polymerization product containing betwen about 40 and about 200 parts/wt. SAN resin for every 100 parts/wt. of said rubber calculated as rubber less said copolymer resin.

3,879,497

CYCLIC O,O,S-TRIESTERS OF PHOSPHORODITHIOIC ACID AND PROCESS FOR MAKING

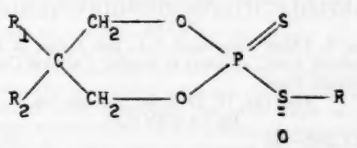
Walter Nudenberg, West Caldwell; Merlin P. Harvey, Passaic, and James Urquhart Mann, Wayne, all of N.J., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 66,870, Aug. 25, 1970, Pat. No. 3,712,878. This application Aug. 21, 1972, Ser. No. 282,640

Int. Cl. C07d *105/04;* **C08f** *27/06*

U.S. Cl. 260—923 **4 Claims**

1. A compound having the following formula:



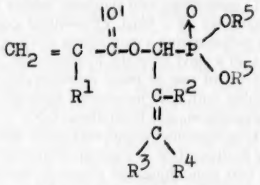
wherein R_1 and R_2 are C_1 to C_3 alkyl groups which can be the same or different, the O portion represents the optional presence of an oxygen atom; and R is α-(benzylidenehydrazino)benzyl.

3,879,498
DIALKYL 1-ACRYLOYLOXY-2-ALKENYL-1-PHOSPHONATES AND DIALKYL 1-METHACRYLOXY-2-ALKENYL-1-PHOSPHONATES

Miltiadis I. Iliopulos, 32 Willowbrook Acres, Parkersburg, W. Va. 26101, and Werner K. E. Ege, 11 London Ring, 67 Ludwigshafen am Rhine, Germany

Filed Aug. 31, 1971, Ser. No. 176,712
Int. Cl. C07f 9/40; c08f 3/00
U.S. Cl. 260—952 8 Claims

1. A compound having the general formula



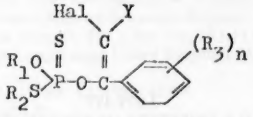
wherein R^1 is a member of the class consisting of hydrogen and methyl, R^2 is a member of the class consisting of hydrogen and an alkyl group having 1 to 4 carbon atoms, R^3 and R^4 are independently selected from the class consisting of hydrogen, of an alkyl group of 1 to 4 carbon atoms and phenyl, and R^5 is an alkyl or haloalkyl of 1 to 6 carbon atoms, preferably 1 to 4 carbon atoms.

3,879,499
0-1-PHENYL-2 HALOVINYL-DITHIO PHOSPHATES

Ernst Beriger, and Jozef Drabek, both of Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 26, 1973, Ser. No. 373,825
Claims priority, application Switzerland, June 27, 1972, 9609/72; May 16, 1973, 7060/73
Int. Cl. C07f 9/16; A01n 9/36
U.S. Cl. 260—957 6 Claims

1. A compound of the formula



wherein R_1 represents methyl or ethyl, R_2 represents n-propyl, n-butyl, isobutyl or sec.butyl, $(R_3)_n$ represents one or more hydrogen atoms, or represents chlorine, bromine or methyl, which can be the same or different, n is 1, 2, or 3, Y represents hydrogen or chlorine, and Hal represents chlorine or bromine.

3,879,500
PROCESS FOR PREPARING MONO- AND DI-ALKYLMERCAPTOPHOSPHOROTHIONOCHLORIDATES

Eugene H. Uhing, Ridgewood, N.J., and Arthur D. F. Toy, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 15, 1973, Ser. No. 406,746
Int. Cl. C07f 9/20
U.S. Cl. 260—981 28 Claims

1. A process for the preparation of mono- and dialkyl-; mono- and dicyclohexyl-; and mono- and dibenzyl-mercapto phosphorothionochloridates which comprises heating a mixture of a chloride selected from the group consisting of lower alkyl chlorides containing from about 1 to about 8 carbon atoms inclusive, cyclohexyl chloride or benzyl chloride and phosphorus pentasulfide at an effective temperature in the range from about 160° to about 300°C., said effective temperature dependent upon the particular chloride employed, for a length of time sufficient to effect reaction.

3,879,501
PROCESS FOR PREPARING PHOSPHORUS-CONTAINING POLYOLS

Michel A. Buisson, Lavera, France, assignor to Naphtachemil, Paris, France

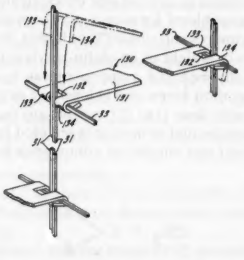
Division of Ser. No. 43,218, June 3, 1970, Pat. No. 3,668,154. This application Dec. 20, 1971, Ser. No. 210,099
Int. Cl. C07f 9/24; C08g 22/14
U.S. Cl. 260—984 7 Claims

1. A method for the preparation of phosphorus containing compounds comprising the steps of adding to a reaction mixture containing an amine selected from the group consisting of lower mono- and di-alkanol amines and primary and secondary lower alkylene diamines and water, a chloro-chloroalkyl phosphate containing an average of 0.5 to 2.5 chlorine atoms joined directly to a phosphorus atom prepared by reaction of a lower alkylene oxide with phosphorus oxychloride in two or more successive increments to liberate HCl to form a salt with unreacted amine, with each succeeding increment of the chloro-chloroalkyl phosphate containing decreasing amounts of the chloro-chloroalkyl phosphate, adding to the reaction mixture after each increment of chloro-chloroalkyl phosphate an alkali metal hydroxide in an amount sufficient to displace the HCl from the salt, with the reaction being carried out at a temperature within the range of 30° to 100°C, and separating the aqueous phase to recover the phosphorus containing compound from the organic phase.

3,879,502
FILL HANGER

Donn B. Furlong, and Samuel Luzaich, both of Santa Rosa, Calif., assignors to Ecodyne Corporation, Chicago, Ill.

Division of Ser. No. 341,006, March 16, 1973, Pat. No. 3,799,516, which is a division of Ser. No. 63,150, Aug. 12, 1970, Pat. No. 3,749,381. This application Aug. 17, 1973, Ser. No. 389,292
Int. Cl. B01f 3/04
U.S. Cl. 261—111 2 Claims



1. In a cooling tower wherein air is displaced to flow directionally generally laterally within the tower in cooling relation with dropping particulate liquid having a splash fill assembly positioned within the fill area of said tower, an improved fill assembly comprising:

a. a plurality of fill strips positioned within said fill area;

b. a plurality of spaced apart vertically suspended fill hangers positioned transversely with respect to said fill strips within said fill area, said fill hangers comprise a plurality of substantially horizontally and generally vertically extending members which intersect one another to form a plurality of parallelogram grids;

c. each of said fill strips being supported by the horizontal portion of one of said parallelogram grids of at least two of said fill hangers;

d. each of said fill hangers including a plurality of fill hangers sections which are attached one atop of another and one along side of another;

e. connecting means integral with said vertical members to connect said fill hanger sections one atop of another; and f. horizontal stabilizer means to connect said fill hanger sections one alongside another and space said fill hangers a predetermined distance apart, said horizontal stabilizer means comprises a substantially horizontal strap having a U-shaped cut-out at each end defining a pair of leg portions, said horizontal stabilizer means being positioned parallel to said fill strips between adjacent fill hangers so as to permit one leg of each end to be crimped about a horizontal member of one fill hanger section and the other leg of each end to be crimped about a horizontal member of a fill hanger section along side thereof with a vertical member of each section therebetween.

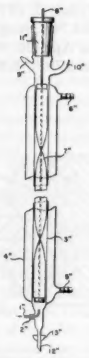
3,879,503
SCINTILLATION ANALYSIS SYSTEM

John I. Peterson, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 76,705, Sept. 30, 1970, Pat. No. 3,776,695. This application Aug. 2, 1973, Ser. No. 384,805

Int. Cl. B01f *3/04*

U.S. Cl. 261—153 **3 Claims**



1. An apparatus for the collection of a carbon dioxide containing gaseous combustion product comprising an externally cooled, vertical tube having positioned coaxially therein and adapted for high speed rotation therein about its longitudinal axis, an elongated strip of inert material having a planar surface in the shape of a helix, said tube containing at the upper end thereof a solvent inlet means and an oxygen outlet means and at the bottom thereof a liquid outlet means, said strip of inert material being a screen-like material having the edges feathered by removal of the outermost longitudinal strands to thereby leave the ends being in contact with the inner bore of said tube such that upon rotation of said strip, and the introduction of solvent to said tube, said strip distributes a thin, substantially uninterrupted film of said solvent over the walls of said tube.

3,879,504
METHOD FOR INJECTION MOLDING OF EXPLOSIVE AND PYROTECHNIC MATERIAL

Jack Sherman, Las Vegas, Nev.; Ronald R. Vigneault, and David A. Colpitts, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 249,599, May 2, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 415,024

Int. Cl. C06b *21/02*

U.S. Cl. 264—3 C **4 Claims**

1. The method of manufacturing explosive transfer trains including the steps of:

comminuting an explosive material selected from the group consisting of RDX, PETN, and lead azide to form particles having largest diameters of 50 microns or less;

mixing said comminuted material with a fluid selected from the group consisting of an uncured silicone rubber, and an oily copolymer of trifluorochloroethylene; and

injecting the resulting mixture into elongated tubes by application of pressure.

3,879,505
EXTRUSION OF FOAMABLE PLASTIC MATERIALS

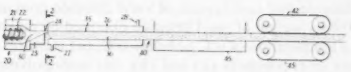
Pierre Emile Boutillier, Colombes, and Lucien Chaudot, Lyon, both of France, assignors to Societe Anonyme: Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation-in-part of Ser. No. 81,420, Oct. 16, 1970, abandoned. This application Jan. 23, 1973, Ser. No. 326,046

Claims priority, application France, Oct. 22, 1969, 69.36308

Int. Cl. B29d *7/02, 27/00*

U.S. Cl. 264—48 **2 Claims**



1. A process for producing an extruded plastic material product comprising the steps of extruding a thermoplastic material with an expanding agent therein through a die outlet, said thermoplastic material being selected from the group consisting of (A) styrene homo and copolymers and styrene derivatives substituted on the ring or in the alpha position, as well as mixtures of said polymers or copolymers with one or more elastomeric compounds, (B) acrylic homo and copolymers, (C) vinyl chloride homo and copolymers, and mixtures thereof with one or more elastomeric compounds, (D) polyolefins, (E) polyamides, (F) polyurethanes, (G), cellulose derivatives, (H) straight chain polyesters, (I) acetal homo and copolymers, (J) polycarbonates, (K) polyethers and (L) polyvinyl ethers and polyvinyl esters, the extruded material having an external surface thereon, feeding the extruded material through an elongated shaper immediately adjacent to the die outlet, the shaper having an internal surface defining a channel, said channel having an inlet and an outlet and said channel inlet circumscribing said die outlet, said shaper channel inlet and said die outlet each having a first side, and a second side opposite said first side, the shaper channel inlet and the die outlet being in close proximity along substantially the entire length of said first side of said shaper inlet and the corresponding side of said die outlet, said second side of the die outlet being substantially removed from the corresponding second side of the shaper inlet within said circumscribed area of said shaper along substantially the entire length of said second sides, thereby to provide for substantially unrestricted expansion of the plastic material extruded through the die within said circumscribing area of the shaper, the external surface of the material extruded through the die outlet immediately making contact with the internal surface of the shaper channel along substantially the entire length of said first side of said shaper inlet, and the channel outlet cross-section being

substantially that of the product desired, cooling rapidly the external part adjacent the external surface of the extruded material along substantially the entire length of said first side of said external surface below the solidification point of the material immediately upon being fed into the shaper channel to form a thick skin of higher density along said first side of said external surface, thereby forming a continuous area of thick skin along the external surface of the extruded material adjacent said first side and imparting sufficient mechanical strength to the extruded product in the shaper to permit it to be pulled through the shaper, expanding the extruded material from said continuous area of thick skin towards said second side to substantially fill the channel and forming a continuous surface area substantially free of such a thick skin on the extruded material adjacent said second side of the shaper channel, and pulling the extruded product through the shaper.

3,879,506
PROCESS FOR PRODUCING CHLORO-VINYL FIBERS HAVING MODIFIED LIGHT REFLECTION

Paolo Melacini, Mestre; Helmut Kirschner, Abano, and Paolo Campana, Vercelli, all of Italy, assignors to Chatillon Societa' Anonima Italiana per ler Fibre Tessili Artificiali S.p.A., Milan, Italy

Filed May 26, 1971, Ser. No. 147,155
Claims priority, application Italy, June 1, 1970, 25392/70
Int. Cl. B29c *25/00;* **B29d** *27/00;* **D01d** *5/04, 5/06*
U.S. Cl. 264—49 **4 Claims**

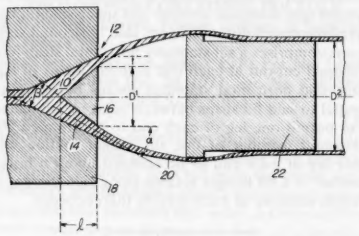
1. A process for preparing chlorovinyl fibers having reduced light reflection, said process consisting essentially of incorporating into a spinning solution of a vinyl chloride polymer selected from the group consisting of (a) homopolymers of vinyl chloride and copolymers of vinyl chloride containing at least 80% by weight of vinyl chloride obtained by polymerization at a temperature greater than 0°C; (b) homopolymers of vinyl chloride and copolymers of vinyl chloride containing at least 80% by weight of vinyl chloride obtained by polymerization at a temperature of 0°C or below 0°C; (c) mixtures of said polymers or copolymers (a) and (b); (d) homopolymers and copolymers of vinyl chloride as defined under items (a) and (b) which have been post-chlorinated; (e) mixtures of said polymers (d) and (a) or/and (b) in any combination; and (f) mixtures of syndiotactic polyvinyl chloride with post-chlorinated atactic polyvinyl chloride, about 2 to 15% by weight, based on the weight of said polymer, of a white or colorless inorganic metal salt selected from the group consisting of potassium sulphate, sodium sulphate, potassium bromate and sodium bromate and having a density greater than 2 g/cc and a particle size of up to about 30 microns, extruding the fibers, removing from the surface of the thus extruded fibers at least a portion of said added salt by contacting said fibers with a solvent for the added salt, stretching the extruded fibers and then drying and heat stabilizing the stretched fibers.

3,879,507
METHOD OF PRODUCING A FOAM-FORM FLAT FILM OR SHEET HAVING A MORE BALANCED MACHINE AND TRAVERSE DIRECTION STRENGTH

Anthony John Cavanna, Pittsford, and Edward Armando Colombo, Fairport, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,628
Int. Cl. B29d *27/00;* **B29f** *3/06*
U.S. Cl. 264—51 **7 Claims**

1. In the process of producing foam-form thermoplastic film or sheeting by extruding a foamable composition comprising a thermoplastic resin and a foaming agent through an annular die of given diameter, gap thickness and die gap angle of divergence from its axis to form a tubular, foam form thermoplastic extrudate of given diameter; drawing said tubular extrudate over a forming mandrel of given diameter larger than the diameter of said die and said extrudate tube; slitting said tubular extrudate, after drawing such over said forming mandrel, to produce a flat film or sheet of said foam extrudate of given width; and taking up said flat extrudate at a given linear speed so as to produce as a product, a flat, biaxially oriented foam-form film or sheet of said given width, a given bulk density, and given machine and transverse direction strengths; the improvement, whereby a foam-form flat film or sheet of said given width and bulk density is produced with more

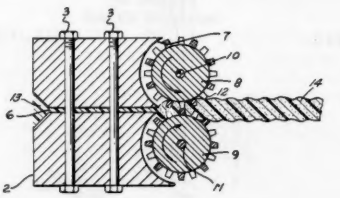


balanced machine and transverse direction strength, which comprises reducing said die gap thickness, increasing said die gap angle of divergence and extruding said composition through said annular die having said smaller die gap thickness than said given die gap thickness and having a larger die gap angle of divergence than said given die gap angle of divergence.

3,879,508
PROCESS FOR PRODUCING A CORRUGATED FOAMED THERMOPLASTIC RESIN SHEET

John Harold Gilbert, Chepstow, England, assignor to Monsanto Chemicals Limited, London, S.W.1., England

Division of Ser. No. 60,971, July 2, 1970, abandoned, which is a division of Ser. No. 663,761, Aug. 28, 1967, Pat. No. 3,571,852. This application Apr. 26, 1973, Ser. No. 354,572
Int. Cl. B29d *27/00;* **B29f** *3/012*
U.S. Cl. 264—53 **7 Claims**



1. In a process for processing a corrugated foamed thermoplastic resin sheet, which includes extruding a foamable thermoplastic resin composition through a die having a slit die orifice to form a foaming resin sheet, the improvement which comprises:

1 feeding said foaming resin sheet into a nip of a pair of driven rollers, said rollers being an integral part of said die and being studded with a series of projecting, intermeshing teeth arranged in a staggered pattern,

2. permitting transverse and longitudinal expansion of said foaming resin sheet within the nip of said pair of rollers, whereby a foamed resin sheet nip of having corrugations and a wave pattern in each corrugation of the extruding foamed resin sheet is formed, the resulting corrugations extending parallel to the direction of extrusion and the resulting wave patterns along the length of the corrugations so that each corrugation is itself corrugated, and

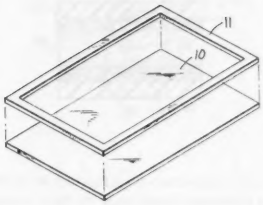
3. supporting said foamed corrugated resin sheet along the direction of extrusion until cool.

3,879,509

METHOD OF PRODUCING THIN CERAMIC SHEETS WITH MINIMAL DISTORTION

Gilbert James Elderbaum, 3 Pallenberg Dr., Clinton, Conn. 06413

Continuation-in-part of Ser. No. 178,007, Sept. 7, 1971, abandoned. This application July 16, 1973, Ser. No. 379,799
Int. Cl. C04b 35/10, 35/64, 37/00
U.S. Cl. 264—56 15 Claims



1. The method of making a sheet of cured ceramic with minimal distortion which comprises the steps of providing a sheet of ceramic greenware of the desired size, defining a substantial border of increased thickness of ceramic greenware in a pattern on said sheet about the area of the desired finished size and shape of said sheet considering shrinkage, said border being in intimate contact with said sheet such that upon curing said border will fuse to said sheet, and subjecting said sheet-border assembly to a temperature and for a time to effect curing of said border and said sheet, said border being selected to be of sufficient weight to restrain the rate of shrinkage of said sheet upon heating, but insufficient to prevent normal shrinkage of said sheet upon curing thereof.

3,879,510

MODIFICATION OF RED BLOOD CELL MEMBRANE WITH POLYISOCYANATES

Masao Kitajima, and Asaji Kondo, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 834,870, June 19, 1969, abandoned. This application Apr. 11, 1972, Ser. No. 243,448
Claims priority, application Japan, June 19, 1968, 43-42416
Int. Cl. A61k 27/10; G01n 1/28, 33/16
U.S. Cl. 424—3 9 Claims

1. A method for modifying red blood cells by reinforcing the membranes thereof without denaturing their hemoglobin which comprises:

adding a polyisocyanate selected from the group consisting of toluylene diisocyanate and triphenylmethane triisocyanate in the form of an emulsion of said polyisocyanate in water to a saline suspension of red blood cells,

said emulsion having been prepared at a temperature not exceeding 35°C., and within a period of time approximating 5 minutes; thereby producing said modified red blood cells characterized by reinforced membranes and hemoglobin resistent to denaturing; separating said modified red blood cells from the remainder of said saline suspension and collecting said modified red blood cells, said polyisocyanate being present in an amount of 10^{-4} to 10^{-1} times by weight of the red blood cells present.

3,879,511

TASTELESS METHENAMINE MANDELATE IN A STABILIZED VEGETABLE OIL SUSPENSION

Frank W. Goodhart, Morristown, and James R. Draper, Dover, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 268,371, July 3, 1972, Pat. No. 3,780,170. This application Aug. 27, 1973, Ser. No. 391,106
Int. Cl. A01n 17/00; A61k 9/00
U.S. Cl. 424—35 5 Claims

1. A substantially tasteless suspension of coated methenamine mandelate particles consisting essentially of:

A. from about 49% to about 91.25% by weight, based on the total weight of the suspension, of vegetable oil vehicle;

B. from about 0 to about 2.5% by weight of a suspension stabilizer; and

C. from about 6.25% to about 51% by weight of coated methenamine mandelate particles comprising:

1. from about 20 to about 80% by weight of finely powdered methenamine mandelate, based on the total weight of the coated particles;

2. from about 5 to about 35% by weight of ethyl cellulose; and

3. from about 15 to about 45% by weight of at least one coating ingredient selected from a group consisting of polyethylene glycol polymers having an average molecular weight of from about 200 to about 20,000.

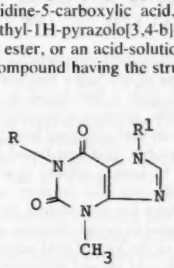
3,879,512

ANTI-ANXIETY COMBINATION AND METHOD OF USE

Bernard Beer, Princeton; Donald E. Clody, Pennington; Zola P. Horovitz, Princeton, all of N.J., and John R. Vogel, New Hope, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 190,691, Oct. 19, 1971, Pat. No. 3,784,688. This application Oct. 9, 1973, Ser. No. 404,477
Int. Cl. A61u 27/00
U.S. Cl. 424—253 8 Claims

1. A method for treating anxiety in an anxious host which comprises administering to the anxious host a composition comprising (a) a pyrazolopyridine selected from the group consisting of 1-ethyl-4-(isopropylidenehydrazino)-1H-pyrazolo[3,4-b]pyridine-5-carboxylic acid, ethyl ester, and 4-(butylamino)-1-ethyl-1H-pyrazolo[3,4-b]-pyridine-5-carboxylic acid, ethyl ester, or an acid-solution salt thereof and b. an xanthine compound having the structure



wherein R and R^1 are the same or different and are lower alkyl having from 1 to about 8 carbons wherein the weight ratio of the xanthine to the pyrazolopyridine is from about 2:1 to 15:1.

3,879,513
SYNERGISTIC COMBINATIONS CONTAINING ORGANO-BROMINE COMPOUNDS AND THEIR USE IN THE CONTROL OF AEROBACTER AEROGENES

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 161,961, July 12, 1971, Pat. No. 3,839,008. This application Apr. 11, 1974, Ser. No. 461,187
Int. Cl. A01n *9/02*
U.S. Cl. 424—277 **5 Claims**

1. Method for controlling the growth of the microorganism Aerobacter Aerogenes in an aqueous system in which said microorganism is found which comprises addding to said system so as to contact said microorganism an effective amount of a combination comprising 5-chloro-4-phenyl-one,2-dithiole-3-1 and bis-1,4-bromoacetoxy-2-butyne, where the weight ratio of the dithiole to the butyne is from 95 to 5% to 5 to 95%.

3,879,514
METHOD OF PRODUCING BURNED CRYSTALLINE CARBONATE MINERALS

Erik Qvale Dahl, Vagsbygd, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Filed Oct. 4, 1972, Ser. No. 294,873
Claims priority, application Norway, Oct. 8, 1971, 3699/71
Int. Cl. C04b *35/64, 33/32*
U.S. Cl. 264—63 **3 Claims**

1. The method of producing burned crystalline carbonate materials to form agglomerates suitable for use in smelting processes comprising:

a. pulverizing a carbonate material selected from the group consisting of crystalline dolomite and crystalline limestone to a size less than the single crystal size of the carbonate material,

b. admixing the pulverized carbonate material with binding agent in an amount from about 0.5 to about 5 parts by weight of carbonate material and sufficient water to form a raw agglomerate, at least a part of the binding agent being dust formed from a prior burning of the same carbonate material,

c. drying the raw agglomerate,

d. burning the agglomerate at a temperature from about 1000° to about 1500°C., and

e. using the burned agglomerate material obtained in a smelting process.

3,879,515
METHOD OF MANUFACTURING POROUS ARTICLES OF SYNTHETIC RESINS

Yoshishige Morita, 413, Nayafusa-cho, Hachioji, Tokyo, Japan

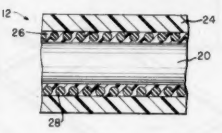
Filed Oct. 18, 1973, Ser. No. 407,748
Int. Cl. B29g *7/02*; **C08f** *47/08*
U.S. Cl. 264—123 **11 Claims**

1. A process of manufacturing articles of synthetic resins, comprising the steps of treating a first portion of particles of said synthetic resin with a first liquid in which said resin is substantially insoluble, treating a second portion of particles of said synthetic resin with a second liquid in which said resin is substantially insoluble, said first liquid being reactive with said second liquid to form a solvent in which said synthetic resin is soluble, allowing said portions to stand for a long enough period of time for penetration of the surface of said particles by said liquid to occur, pouring off the excess liquid from each portion at the end of said period, mixing said first treated portion with said second-treated portion, and heating said mixed portions to a temperature below the melting and the sintering temperatures of said resin to react said first liquid with said second liquid at points and regions of contact of said particles to form a solvent for said resin which bonds said particles together to form a porous article of said synthetic resin.

3,879,516
METHOD OF CONSTRUCTING A CATHETER

Sidney Wolvek, Brooklyn, N.Y., assignor to Technibiotics, Inc., Brooklyn, N.Y.

Filed Dec. 7, 1972, Ser. No. 313,124
Int. Cl. B29c *13/04*; **B29d** *3/02*
U.S. Cl. 264—135 **5 Claims**



1. A method of constructing a catheter comprising the steps of

forming an outer catheter layer by dissolving a flexible plastic material in a solvent;

drawing a film of said dissolved flexible plastic material onto the interior surface of an elongate rigid tube, said rigid tube being formed of a material which does not react chemically with said flexible plastic material and said solvent,

causing the dissolved plastic material to gel by exposing it to the ambient atmosphere for a predetermined amount of time;

baking said material for a specified time at a specified elevated temperature to expel residual solvent contained therein;

repeating the drawing, gelling and baking steps, each succeeding film liquifying and bonding to the surfaces of the previously drawn film with which it contacts, until a layer of material having a predetermined thickness is built up on the interior of the rigid tube;

extruding a thin filament of said flexible plastic material;

forming said filament into a helical coil and heat setting said coil;

inserting said coil within the built up outer layer;

forming an inner catheter layer by

drawing a film of said dissolved flexible plastic material onto the interior surface of said built up outer catheter layer and around said coil, said film causing the surfaces of the previously drawn films and helical coil with which it contacts to liquify so that the film bonds to said previously drawn films and coil,

causing the dissolved material to gel by exposing it to the ambient atmosphere for a predetermined amount of time;

baking said material for a specified time at a specified elevated temperature to expel residual solvents;

repeating the drawing, gelling and baking steps each succeeding film liquifying and bonding to the surfaces of the previously drawn film and helical coil with which it contacts until a layer of material having a predetermined thickness is built up on the interior of the outer layer embedding said coil;

subjecting said outer layer, inner layer and embedded coil to a final bakeout at an elevated temperature for a specified time; and

removing the assembly of said outer layer, inner layer and embedded coil from the interior of said elongate rigid tube.

3,879,517

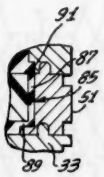
METHOD FOR MAKING A DUAL SEAL INSULATOR FOR MULTIPLE CONDUCTOR CONNECTORS

John E. Meyn, Anaheim, Calif., assignor to Microdot Inc., South Pasadena, Calif.

Filed Dec. 26, 1972, Ser. No. 317,926The portion of the term of this patent subsequent to Aug. 25, 1987, has been disclaimed.

Int. Cl. B29f 1/10

U.S. Cl. 264—135 17 Claims



1. A method of fabricating a composite body having a rigid plastic insulator with an elastomeric grommet seal at one end of the insulator and a wafer seal at the other end of the insulator, the composite body having multiple bores extending through the grommet and wafer seals and the insulator, the method including the steps of:

molding the rigid insulator of plastic material with multiple bores extending through the insulator between first and second end faces of the insulator;

coating the first and second end faces of the insulator with an uncured thermosetting adhesive having adhesive properties compatible with the materials of the insulator and the grommet and wafer seals;

enclosing the insulator in a mold to form with the first end face of the insulator a first mold cavity having substantially the configuration desired for the grommet seal, and to form with the second end face of the insulator a second mold cavity having substantially the configuration desired for the wafer seal, the first mold cavity communicating with the second mold cavity through a passage formed at least in part by the insulator;

plugging at least some of the bores of the insulator with a plurality of core pins each having a length sufficient to permit the core pins to extend beyond both the first and second end faces of the insulator;

depositing an uncured thermosetting elastomeric material in one of the first and second mold cavities to surround the core pins and fill the one cavity, and to permit a portion of the elastomeric material to flow through the passage to surround the core pins and fill the other of the first and second cavities;

curing the thermosetting adhesive and the elastomeric material to form the composite body; and

withdrawing the composite body from the mold and the core pins to permit shrinkage of the elastomeric material to the desired configurations.

3,879,518

ELECTRIC CABLES

Robert Ney, Heistern Kreis Aachen, and Hans-Christoph Rhiem, Eschweiler Kreis Aachen, both of Germany, assignors to Lynenwerk KG, Eschweiler Kreis Aachen, Germany

Filed Sept. 4, 1973, Ser. No. 393,753

Claims priority, application United Kingdom, Sept. 5, 1972, 41209/72

Int. Cl. B29f 3/10

U.S. Cl. 264—174 11 Claims

1. A method of producing an electric cable by means of a cable-sheathing head, which includes the steps of: feeding a cable core into a cable-sheathing head, extruding a polyolefin material into the said head so that said polyolefin material embraces said core to form a tubular-formed sheath therefor, feeding bundles of unimpregnated glass fibers free from any adherence means into said head so that the bundles are embedded in and mechanically connected to the tubular-formed sheath material at angularly spaced locations circularly distributed about the axis of the core, said glass fibers being arranged to permit ducted gathering thereof into a precompressed bundle of minimum cross section prior to introduction in said head, effecting a preliminary compacting of the fibers in each of said bundles within said head, subjecting each bundle to underpressure for removing the air entrained with the fibers in the respective bundle, supplying the sheath material so as to provide additional compacting of the fibers, maintaining said compacting by a shrinkage exerted during contraction when the sheath material quickly cools to harden at atmospheric pressure after leaving said head, and forming radially extending undulations in each bundle to thereby improve the mechanical connection of a bundle within the polyolefin.

3,879,519

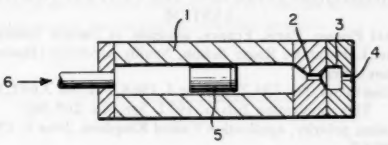
FLASH EXTRUSION PROCESS

Rudolph Woodell, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 27, 1973, Ser. No. 391,523

Int. Cl. D01f 7/00

U.S. Cl. 264—205 3 Claims



1. A process for preparing plexifilamentary structures of poly[bis(4-aminocyclohexyl)methane dodecanediamide] comprising forming a solution of from 10 to 20 percent by weight of the polymer in a mixed solvent consisting essentially of greater than 50 percent by weight of dichlorofluoromethane and at least 10 percent by weight of hexafluoroisopropanol, heating said solution to a temperature in the range of 170°–210°C. under a super-autogenous pressure sufficient to maintain said solution as a one-phase system, and extruding said heated solution into a region at substantially lower pressure whereupon flash vaporization of substantially all of said solvent occurs and solid polymer is precipitated as a plexifilamentary structure.

3,879,520

METHOD FOR DISSOLVING CERAMIC BERYLLIA

Arthur E. Sands, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 31, 1963, Ser. No. 255,740

Int. Cl. C01g 56/00

U.S. Cl. 423—5 4 Claims

1. A process for dissolving a nuclear fuel composition consisting of a sintered mass containing beryllia, a nuclear fuel selected from uranium and plutonium and a stabilizing agent, sintered at a temperature of at least 1500°C. to a density of about 2.7 grams/cc which comprises contacting said sintered mass with a stoichiometric excess of lithium oxide dissolved or dispersed in a carrier selected from lithium hydroxide, sodium hydroxide or sodium nitrate at a temperature in the range 750°C–850°C. to convert the beryllia to lithium beryllate and thereafter recovering the nuclear fuel content of said mass.

3,879,521
REMOVAL OF SO_2 FROM FLUE GAS

Robert E. Anderson, Sunnyvale, Calif., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Jan. 2, 1973, Ser. No. 320,576
Int. Cl. C01b *17/00, 17/45, 17/46*
U.S. Cl. 423—242 **5 Claims**

1. A process for removing SO_2 from a gas, which process comprises:

a contacting a SO_2-containing gas with an aqueous alkali metal scrubbing solution;

b passing the resultant alkali metal bisulfite solution through a weak-base anion-exchange resin;

c returning the effluent from the resin having a pH greater than 7.0 to the contacting step (a);

d on exhaustion, regenerating the spent resin with an aqueous ammonia solution;

e reacting the effluent from the regeneration step with $Ca(OH)_2$;

f separating the resulting calcium sulfite-containing precipitate; and

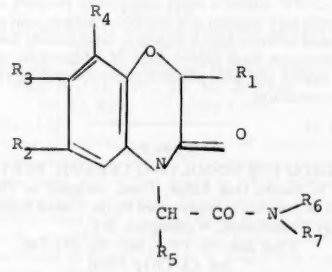
g recovering the liberated NH_3 from step (e) for recycle as a regenerant to step (d).

3,879,522
NEW 2,3-DIHYDRO-1,4-BENZOXAZINES IN COMPOSITIONS EFFECTING THE CENTRAL NERVOUS SYSTEM

Marcel Pesson, Paris, France, assignor to Societe Anonyme dite: Laboratoire Roger Bellon, Neuilly-sur-Seine (Hauts de Seine), France

Division of Ser. No. 734,223, June 4, 1968, Pat. No. 3,681,330. This application July 6, 1972, Ser. No. 269,340
Claims priority, application United Kingdom, June 6, 1967, 25999/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 **31 Claims**

1. A pharmaceutical composition comprising, in association with a compatible non-toxic pharmaceutical carrier or diluent, an amount therapeutically effective on the central nervous system of 1,3-oxo-2,3-dihydro-1,4-benzoxazine of the formula:

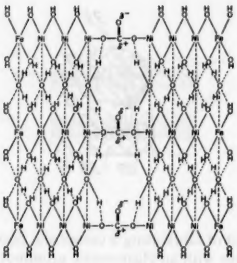


in which R_1 represents straight or branched lower alkyl, R_2, R_3 and R_4 are identical or different and each represents a hydrogen atom, straight or branched lower alkyl, a halogen atom, or lower alkoxy, R_5 represents a hydrogen atom, lower alkyl, and R_6 and R_7 are identical or different, and each represents a hydrogen atom, phenyl or lower alkyl-substituted phenyl, lower alkyl, or lower hydroxyalkyl or R_6 and R_7 taken together with the nitrogen atom to which they are attached, form a heterocyclic 5 or 6 ring member.

3,879,523
COMPOSITE METAL HYDROXIDES

Shigeo Miyata; Teruhiko Kumura, and Minoru Shimada, all of Takamatsu, Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1970, Ser. No. 96,214
Claims priority, application Japan, Dec. 12, 1969, 44-99358
Int. Cl. C01g *56/00;* **C01b** *35/00;* **C01g** *49/00*
U.S. Cl. 423—250 **17 Claims**



1. A composite metal hydroxide expressed by the following composition formula:

$$M_{0.5\ 1/6}^{2+}M_2^{3+}(OH)_{7\text{-}2z\ \ 3/4\text{-}2z}(A^{2-})_z{\cdot}0.625\sim18H_2O$$

wherein M^{2+} is a divalent metal selected from the group consisting of copper, beryllium, calcium strontium, barium, zinc, cadmium, tin, lead, manganese and metals of group VIII of the Periodic Table; M^{3+} is a trivalent metal selected from the group consisting of metals of group III of the Periodic Table, titanium, metals of group V of the Periodic Table, chromium, manganese, metals of group VIII of the Periodic Table, rare earth metals and americium; A^{2-} represents a divalent inorganic ion selected from the group consisting of $CO_3^=$, $CrO_4^=$, $Cr_2O_7^=$, $B_4O_7^=$, $MoO_4^=$, $SeO_3^=$, $SeO_4^=$, $SiO_3^=$, $HPO_4^=$, $NH_4PO_4^=$, $SiF_6^=$, $Pt(CN)_4^=$, $SO_3^=$ and $S_2O_3^=$; and

$$1/6>(z/(2.5\sim18)>1/20,$$

said composite metal hydroxide having a layer crystal structure expressed substantially by the following X-ray diffraction pattern:

d(A)	relative intensity (I/I_o)
7.8 ± 3.2	100
3.9 ± 1.6	5 – 80
2.6 ± 1.2	5 – 60
1.54 ± 0.05	2 – 10
1.51 ± 0.05	2 – 10

and exhibiting an endothermic peak owing to isolation of crystal water at a temperature exceeding 200°C. in the differential thermal analysis.

3,879,524
METHOD OF TRANQUILIZING ANIMALS

Herbert L. Wehrmeister, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Dec. 4, 1972, Ser. No. 312,078
Int. Cl. A61k *27/00*
U.S. Cl. 424—270 **3 Claims**

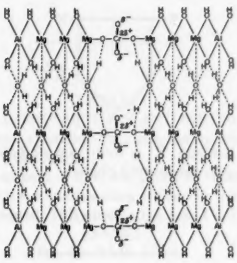
1. A method of tranquilizing a warm-blooded animal comprising administering to a warm-blooded animal in need of such treatment a tranquilizing amount of the compound 2-ethyl-4,4-dimethyl-2-thiazoline or a pharmaceutically acceptable salt thereof in an oral dosage of from about 1.8 to about 18 mg/kg or by administering a pharmaceutically acceptable salt thereof intravenously.

3,879,525

COMPOSITE METAL HYDROXIDES

Shigeo Miyata; Teruhiko Kumura, and Minoru Shimada, all of Takamatsu, Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1970, Ser. No. 96,430
Claims priority, application Japan, Dec. 12, 1969, 44-99358
Int. Cl. C01b *35/00*; C01g *49/00*
U.S. Cl. 423—277 2 Claims



1. A composite metal hydroxide expressed by the following composition formula:

$$Mg_{0.5-16}M_2^{3+}(OH)_{7-2z\quad 38-2z}$$
$$(A^{2-})_z\ 0.625\quad 18\ H_2O$$

wherein M^{3+} is a trivalent metal selected from the group consisting of aluminum, iron and chromium; A^{2-} represents a divalent anion selected from the group consisting of $S^{=}$, $Pt(CN_4)^{=}$, $CS_3^{=}$, $CrO_4^{=}$, $Cr_2O_7^{=}$, $B_4O_7^{=}$, $MoO_4^{=}$, $SeO_3^{=}$, $SeO_4^{=}$, $SiO_3^{=}$, $HPO_4^{=}$, $NH_4PO_4^{=}$, $SiF_6^{=}$ and $S_2O_3^{=}$; is a positive number falling within the range:

$$1/6 > \frac{z}{205 \sim 18} > 1/20,$$

said composite metal hydroxide having a layer crystal structure expressed substantially by the following X-ray diffraction pattern:

d (A)	Relative Intensity (I/I_o)
7.8 ± 3.2	100
3.9 ± 1.6	5 – 80
2.6 ± 1.2	5 – 60
1.54 ± 0.05	2 – 10
1.51 ± 0.05	2 – 10

and exhibiting an endothermic peak owing to isolation of crystal water at a temperature exceeding 170°C. in the differential thermal analysis.

3,879,526

HIGH ENERGY OXIDIZERS AND METHOD OF SYNTHESIZING SAME

Karl O. Christe, Calabasas, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 4, 1972, Ser. No. 312,014
Int. Cl. C01b *35/00*, *7/24*; C01g *55/00*
U.S. Cl. 423—277 15 Claims

1. The composition of matter consisting of a salt having the cation $ClO_2F_2^+$, and an anion selected from the group consisting of AsF_6^-, BF_4^- and PtF_6^-.

3,879,527

ALKALI METAL POLYSILICATES AND THEIR PRODUCTION

Orlando L. Bertorelli; Robert K. Mays, both of Havre de Grace; Lloyd E. Williams, Bel Air, all of Md., and Howard F. Zimmerman, Jr., Athens, Tenn., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Oct. 28, 1971, Ser. No. 193,484
Int. Cl. C01b *33/32*
U.S. Cl. 423—332 3 Claims

1. A method for producing alkali metal polysilicates, said method comprising the steps of hydrothermally reacting an aqueous dispersion consisting essentially of finely divided silica, an alkali metal sulfate and an alkali metal hydroxide at a temperature in the range of from 280°F to 410°F and for a period of at least 2.5 hours, said dispersion comprising said silica and said alkali metal hydroxide having a silica to alkali metal oxide weight ratio of at least 1.8:1; said sulfate being present in said dispersion in an amount of from about 2 to 15% by weight based on the weight of the water; filtering said reaction mixture to remove insolubles, passing said reaction mixture into the upper portion of a drying chamber and dispersing said mixture in the form of fine droplets in the upper portion of said drying chamber; contacting said droplets with a mass of upwardly directed air at a temperature of at least 400°F, fracturing and pulverizing the spray dried product so that the density of the resulting fractured particles is at least 30 pounds per cubic foot; agitating said particles while maintaining said particles at a temperature of at least 70°C to round off the sharp edges of the fractured particles; contacting said particles with a mass of air at a temperature sufficient to reduce the moisture content of said particles to less than 25 percent and recovering the resulting product.

3,879,528

CHLORINATED SULFAMIDES AND THEIR PREPARATION

Daniel J. Jaszka, Tonawanda, N.Y., and David Curtis, Ann Arbor, Mich., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,781
Int. Cl. C01b *21/52*, *21/54*
U.S. Cl. 423—386 4 Claims

1. N,N' dichlorosulfamide.

2. A process for the production of chlorinated sulfamides comprising the steps of reacting sulfamide with chlorine monoxide at a temperature range of from about −20° to about 50°C in a solvent system and recovering a chlorinated sulfamide.

3,879,529

PROCESS FOR PREPARING PYROSULFURYL FLUORIDE

Hideo Tomomatsu, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

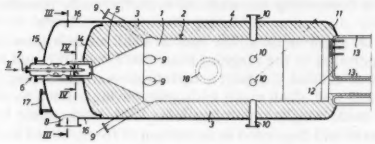
Filed Sept. 24, 1973, Ser. No. 400,008
Int. Cl. C01b *17/45*
U.S. Cl. 423—468 15 Claims

1. A process for preparing pyrosulfuryl fluoride comprising reacting fluosulfonic acid with phosphorous pentoxide to form pyrosulfuryl fluoride, and distilling pyrosulfuryl fluoride, and collecting the pryorsulfuryl fluoride by condensation.

3,879,530
METHOD FOR THE COMBUSTION OF SULPHUR

Jean-Pierre Perret, Tarnos, and Bruno Vidon, Suresnes, both of France, assignors to Societe Anonyme Pechiney Ugine Kuhlmann, Paris, France

Filed Mar. 8, 1972, Ser. No. 232,672
Claims priority, application France, Mar. 10, 1971, 71.08343
Int. Cl. C01b 17/54
U.S. Cl. 423—543 9 Claims



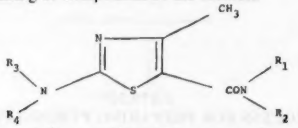
1. A method for the combustion of liquid sulphur in a combustion chamber, comprising first passing a stream of liquid sulphur under pressure through a small diameter orifice into a stream of primary combustion supporting gas and forming a relatively coarse spray, then passing the mixture of the relatively coarse spray and primary combustion gas through a constriction zone co-axial with the orifice, setting the primary combustion-supporting gas into turbulent motion before entering the constriction zone, then introducing the relatively fine spray leaving the constriction zone coaxially into the apex of a conical space formed by an adjacent conical end wall of the combustion chamber, maintaining the flow rate of the primary combustion stream at a rate at least sufficient to support combustion of substantially all of the sulphur introduced into the primary stream, and introducing secondary combustion-supporting gas along the lateral walls of the combustion chamber downstream of the conical space relative to the direction of flow in the combustion chamber to dilute the products of combustion to the desired concentration and inhibit the transfer of heat of combustion to the walls of the combustion chamber.

3,879,531
2-AMINOTHIAZOLES COMPOSITIONS AND METHODS FOR USING THEM AS PSYCHOTHERAPEUTIC AGENTS

Zaven S. Ariyan, Woodbury, Conn.; Marshall Kulka, and William A. Harrison, both of Guelph, Ontario, Canada, assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal, Ltd., Quebec, Canada

Filed July 17, 1972, Ser. No. 272,119
Int. Cl. A61k 27/00
U.S. Cl. 424—270 24 Claims

1. A method of preventing or inhibiting aggressive behavior in an animal subject, said method comprising administering to an animal subject a thiazole compound selected from the group consisting of compounds of the formula



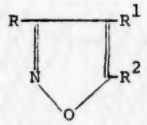
wherein R_1 is hydrogen, R_2 is benzyl, p-chlorobenzyl, p-methoxybenzyl, 2-phenylethyl, 2,6-dimethylphenyl, 2,6-diethylphenyl, 2,4,6-trimethylphenyl or phenyl, R_3 is hydrogen or N-nitroso and R_4 is hydrogen, methyl or ethyl, provided that only when R_2 is phenyl R_3 is N-nitroso; or R_1 is methyl, R_2 is benzyl and R_3 and R_4 are each hydrogen; or R_1 and R_2 are each n-butyl and R_3 and R_4 are each hydrogen; and their pharmaceutically acceptable acid addition salts, said thiazole compound being administered in an amount which is effective to prevent or inhibit aggressive behavior in an animal subject.

3,879,532
CONTROL BY ISOXAZOLES OF ENDOPARASITIC NEMATODES

Duane K. Hass, and John B. Carr, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 18, 1974, Ser. No. 434,523
Int. Cl. A61k 27/00
U.S. Cl. 424—272 7 Claims

1. A method for controlling endoparasitic nematodes in warm-blooded animals which comprises orally administering to the animal a nematocidally effective dosage of an isoxazole of the formula



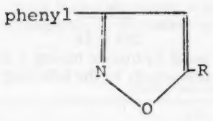
wherein R is halogen, R^1 is hydrogen or halogen and R^2 is phenyl or halogen-substituted phenyl.

3,879,533
ENDOPARASITIC NEMATODE CONTROL BY ISOXAZOLES

John B. Carr, and Duane K. Hass, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 18, 1974, Ser. No. 434,524
Int. Cl. A61k 27/00
U.S. Cl. 424—272 5 Claims

1. A method for controlling endoparasitic nematodes in warm-blooded animals which comprises orally administering to the animal a nematocidally effective dosage of an isoxazole of the formula:



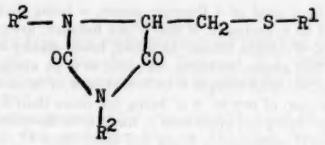
wherein R is halogen, alkyloxy or alkylthio wherein each alkyl moiety contains from 1 to 4 carbon atoms.

3,879,534
METHOD FOR TREATING DANDRUFF

Paul Rambacher, Rosenheim, and Siegfried Make, Kirchdorf, Inn, both of Germany, assignors to Diamalt Aktiengesellschaft, Munich, Germany

Filed July 17, 1972, Ser. No. 272,718
Claims priority, application Germany, July 30, 1971, 2138225
Int. Cl. A01n 9/22
U.S. Cl. 424—273 3 Claims

1. A method for treating dandruff which comprises applying to the scalp a composition containing a therapeutically effective amount of a hydantoin having the formula



wherein

R^1 is carboxymethyl or carboxyethyl, and

R^2 is hydrogen or alkyl having from 1 to 5 carbon atoms.

3,879,535

ANESTHETIC COMPOSITIONS AND METHODS OF USE

Harry E. Stoliker, Orefield, Pa., assignor to Parke, Davis & Company, Detroit, Mich.

Continuation-in-part of Ser. No. 334,128, Feb. 20, 1973, abandoned, which is a continuation of Ser. No. 137,088, March 23, 1971, abandoned. This application Jan. 17, 1974, Ser. No. 433,987

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **10 Claims**

1. A pharmaceutical composition possessing anesthetic activity and suitable for parenteral administration, comprising, in combination, one part by weight of 2-(ethylamino)-2-(2-thienyl)cyclohexanone and 0.33 to 3 parts by weight of 4-(o-fluorophenyl)-6,8-dihydro-1,3,8-trimethylpyrazolo[3,4-e][1,4]diazepin-7(1H)-one.

3,879,536

CONTROL OF BACTERIA AND FUNGI IN AQUEOUS SYSTEMS

William J. Meyers, Jr., Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Dec. 4, 1972, Ser. No. 312,217

Int. Cl. A01n *9/12, 9/14*

U.S. Cl. 424—275 **3 Claims**

1. A composition capable of inhibiting the formation of bacteria and fungi-caused slimes in water consisting essentially of from 10 to 90% by weight of 3,3,4,4-tetrachlorotetrahydrothiophene-1,1-dioxide and 90 to 10% of bis(trichloromethyl)sulfone.

3,879,537

TREATMENT OF ICHTHYOSIFORM DERMATOSES

Eugene J. Van Scott, 1138 Sewell Ln., Rydall, Pa. 19046, and Ruey J. Yu, 4400 Dexter St., Philadelphia, Pa. 19128

Filed Sept. 4, 1973, Ser. No. 394,269

Int. Cl. A61k *27/00*

U.S. Cl. 424—311 **6 Claims**

1. A method of treating icthyosis in humans suffering therefrom comprising topically applying to involved areas of the body an effective amount of a composition containing from one to about twenty percent by weight of at least one compound selected from the group consisting of glycolic acid, citric acid, malic acid, tartronic acid, tartaric acid, glucuronic acid, pyruvic acid, ethyl pyruvate, methyl pyruvate, 2-hydroxy isobutyric acid, and 3-hyroxy butyric acid in admixture with a pharmaceutically acceptable carrier.

3,879,538

EMPLOYMENT OF SELENIUM COMPOUNDS IN LIVING ORGANISMS

Klaus Schwarz, Huntington Park, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 24, 1972, Ser. No. 300,282

Int. Cl. A61v *27/00*

U.S. Cl. 424—319 **10 Claims**

1. A method of treating selenium deficiency in an animal organism which comprises administering to the animal an effective, but non-toxic amount of at least one compound selected from the group consisting of seleno bis (acetyl L-asparagine), seleno bis (acetyl L-alanine), seleno bis (acetyl L-glutamic acid), seleno bis (acetyl glycine), seleno bis (acetyl L-isoleucine), seleno bis (acetyl L-threonine), seleno bis (acetyl L-valine), seleno bis L-phenylalanine), seleno bis (acetyl L-leucine), seleno bis (acetyl L-tryptophan), seleno bis (acetyl L-tyrosine), seleno bis (propionyl L-valine), and seleno bis (valeryl L-valine).

3,879,539

FUNGICIDALLY ACTIVE 3-AMINO-PROPIONIC ACID CHLOROANILIDES

Edgar Enders, Cologne, and Paul-Ernst Frohberger, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

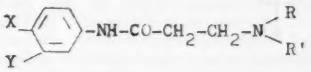
Filed May 10, 1973, Ser. No. 359,166

Claims priority, application Germany, May 17, 1972. 2224006

Int. Cl. A01n *9/20*

U.S. Cl. 424—324 **8 Claims**

1. A method of combating fungi which comprises applying to the fungi or their habitat a fungicidally effective amount of a 3-aminopropionic acid anilide of the formula



in which

X and Y are each halogen, methyl or trifluoromethyl, provided that at least one of them is halogen,

R is alkyl, cycloalkyl or alkenyl each of up to 6 carbon atoms, and

R' is hydrogen, or alkyl or alkenyl each of up to 6 carbon atoms,

or an acid-addition salt thereof.

3,879,540

METHODS AND CYCLOPENTYL BENZAMIDE COMPOSITIONS FOR PRODUCING DEPRESSANT ACTIVITY

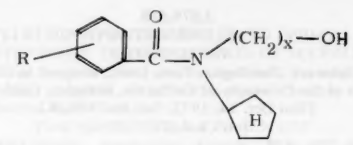
William D. Roll, Toledo, Ohio, assignor to The University of Toledo, Toledo, Ohio

Continuation-in-part of Ser. No. 253,520, May 15, 1972, Pat. No. 3,825,595, which is a continuation-in-part of Ser. No. 123,842, March 12, 1971, abandoned. This application June 17, 1974, Ser. No. 479,620

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 **26 Claims**

1. A method of producing a depressant and hypotensive activity in a host animal needing such treatment, comprising administering internally to said host animal a non-toxic but effective quantity of a compound of the formula:



wherein R is selected from the group consisting of methyl, methoxy, and chloro radicals, and wherein x is a whole number from 1 to 3.

3,879,541

ANTIHYPERGLYCEMIC METHODS AND COMPOSITIONS

Hans-Joachim Kabbe, Leverkusen; Harald Horstmann, Wuppertal-Elberfeld; Hans Plumpe, Wuppertal-Elberfeld; Walter Puls, Wuppertal-Elberfeld, and Siegfried Petersen, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

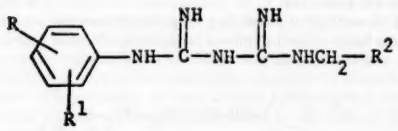
Continuation-in-part of Ser. No. 118,958, Feb. 25, 1971, abandoned, and Ser. No. 120,332, March 2, 1971, abandoned. This application Jan. 16, 1973, Ser. No. 324,218

Claims priority, application Germany, Mar. 3, 1970, 2009738; Mar. 3, 1970, 2009743. The portion of the term of this patent subsequent to Sept. 19, 1989, has been disclaimed.

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 **14 Claims**

1. A method of reducing the blood sugar level in a hyperglycemic human or animal which comprises orally administering to such human or animal a blood sugar lowering amount of a component of the formula



or a pharmaceutically acceptable non-toxic acid addition salt thereof wherein one of R and R^1 is hydrogen and the other is 4-methyl, and R^2 is n-propyl.

3,879,542

ANTI-ARTHROPODAL FORMULATION AND METHOD

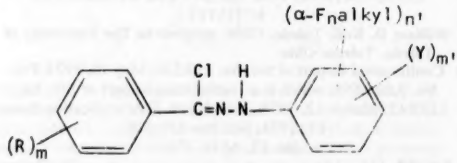
Girts Kaugars, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 16, 1972, Ser. No. 297,887

Int. Cl. A01n *9/20*

U.S. Cl. 424—327 **22 Claims**

1. The method for controlling arthropod pests which is characterized by contacting the pests with an effective, anti-arthropodal amount of a benzoyl chloride (α-$F_n$alkylphenyl)hydrazone having the structural formula:



wherein the characterizing substituent group "α-$F_n$alkyl" is a fluorine substituted lower-alkyl group of from 1 to 3 carbon atoms, inclusive, having at least one F atom on the α-carbon and up to a total of 4 fluorine atoms, n being therefore an integer 1 to 4, inclusive; R and Y are halogen, lower alkyl of from 1 to 4 carbon atoms, inclusive, lower-alkoxy of from 1 to 4 carbon atoms, inclusive, or nitro; m is an integer 0 to 5, inclusive; m' is an integer 0 to 2, inclusive, n' is an integer 1 or 2; the sum of m+ m′ + n′ being not more than 6, the sum of $n' + m'$ being not more than 3, the sum of the carbon atoms in the alkyl substituents being not more than 15, and there being no more than one nitro group in the molecule.

3,879,543

CERTAIN BENZOYL CHLORIDE PHENYLHYDRAZONES AS INSECTICIDES AND MITICIDES

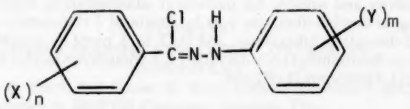
Girts Kaugars, Cooper Township, Kalamazoo County, and Edwin G. Gemrich, II, Richland Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 709,943, March 4, 1968, abandoned. This application Nov. 26, 1968, Ser. No. 779,251

Int. Cl. A01n *9/20*

U.S. Cl. 424—327 **60 Claims**

1. A composition for combating pestiferous insects and mites comprising a dispersible, solid carrier and a benzoyl chloride phenylhydrazone in effective amound having the structural formula:



wherein X is halogen, alkyl of from 1 to 6 carbon atoms, inclusive, and nitro; Y is halogen, alkyl of from 1 to 6 carbon atoms, inclusive, and nitro; n is an integer from 0 to 5, inclusive; and m is an integer from 0 to 3, inclusive; the sum of n + m being not more than 6, the sum of carbon atoms in alkyl substituents being not more than 15, and there being no more than one nitro group in the molecule.

3,879,544

METHOD FOR SUPPRESSING HISTAMINE RELEASE

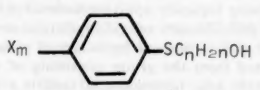
David B. Reisner, Hightstown; Bernard J. Ludwig, North Brunswick; George M. Fukui, and Frank M. Berger, both of Princeton, all of N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

Filed May 9, 1973, Ser. No. 358,661

Int. Cl. A61k *27/00*

U.S. Cl. 424—337 **11 Claims**

1. A method for suppressing the release of histamine from sensitized leukocytes in a warm blooded animal in need of such treatment which comprises administering internally to said animal, in an amount sufficient to suppress the release of histamine in said animal, a compound selected from the group of compounds having the formula:



wherein X is halogen or lower alkyl; m is an integer 1 or 2 and n is an integer from 2 to 6, inclusive.

3,879,545

VACCINES FOR THE PREVENTION OF DENTAL CARIES

Abdul Gaffar, 30 Macafee Rd., Somerset, N.J. 08873, and Richard Charles Kestenbaum, 18 Bradford Rd., Old Bridge, N.J. 08857

Continuation-in-part of Ser. No. 126,933, April 22, 1971, abandoned. This application May 16, 1973, Ser. No. 360,964

Int. Cl. C12k *5/00*

U.S. Cl. 424—92 9 Claims

1. A vaccine for immunization against dental caries, which comprises an aqueous, saline dispersion of from 0.1 to 1 gram per liter of a levan-polysaccharide elaboration product of a levan-producing strain of the genus Streptococcus, said levan-polysaccharide having a molecular weight fraction having characteristic infra-red absorption peaks at 920 $cm.^{-1}$, 875 $cm.^{-1}$ and 805 $cm.^{-1}$, an intrinsic viscosity at 25° C of from 0.15–0.16, and $[\alpha]_D^{20}$ rotation of 43° to 54°.

3,879,546

SACCHARASE INHIBITORS

Werner Frommer; Walter Puls, and Delf Schmidt, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 28, 1973, Ser. No. 336,720

Claims priority, application Germany, Mar. 1, 1972, 2209832

Int. Cl. C12d *13/02*

U.S. Cl. 424—115 18 Claims

1. A process for the production of a saccharase inhibitor which comprises subjecting to hydrolytic degradation a polysaccharidic or oligosaccharidic amylase inhibitor derived from microorganisms of the order Actinomycetales.

3,879,547

PROCESS FOR OBTAINING AN ANTI-HYPERTENSIVE PRINCIPLE FROM *ANACARDIUM OCCIDENTALE* L.

Yvonne Thuillier, Paris, France, and Paulette Giono-Barber, born Michel, Dakarfann, Senegal, assignors to Albert Rolland, S.A., Paris, France

Continuation-in-part of Ser. No. 162,820, July 15, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,519

Claims priority, application United Kingdom, July 16, 1970, 34608/70

Int. Cl. A61k *27/14*

U.S. Cl. 424—195 3 Claims

1. A process for extracting an anti-hypertensive principle for treatment of animals from the bark of Anacardium occidentale L. comprising the steps of grinding the bark, treating 20 to 80 grams of the ground bark with 1 liter of petroleum ether in the absence of light at a temperature of from 0° to 15°C. for 8 hours, filtering the treated bark to obtain an insoluble residue and a filtrate, treating the insoluble residue with 1 liter of diethyl ether in the absence of light at a temperature of from 0° to 15°C. for 8 hours, filtering the treated insoluble residue to obtain and insoluble residue and a filtrate, treating the insoluble residue with an alcohol reagent selected from the group consisting of a 35% to 85% aqueous solution of ethanol, methanol and mixtures thereof in the absence of light at a temperature of from 0° to 15°C. for 24 hours, filtering the alcohol treated insoluble residue to obtain a filtrate and an insoluble residue, drying the filtrate by removing the alcohol reagent in the absence of light and in vacuo at a temperature below 60°C. to obtain a dry extract containing the antihypertensive principle, dissolving 5 grams of the dry extract in about 30 ml. of water, treating the solution with 110 ml. of water containing 12 grams of caffein per liter to precipitate tannis and the anti-hypertensive principle, separating the precipitate from the remaining liquid, dissolving the precipitate in 10 to 20 ml. of methanol per 5 grams of precipitate, adding water to make a total of 250 ml., treating the solution with 10 to 100 ml. of chloroform three successive times to extract the caffein, and concentrating the remaining water-methanol phase in vacuo at a temperature below 60°C until dry.

3,879,548

METHOD OF TREATING MILK FEVER IN DAIRY CATTLE WITH 1-ALPHA-HYDROXYCHOLECALCIFEROL

Hector F. De Luca, Madison, and Neal A. Jorgensen, Middleton, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 21, 1974, Ser. No. 435,099

Int. Cl. A61k *27/00*

U.S. Cl. 424—236 4 Claims

1. The method of treatment and prophylaxis for milk fever disease in dairy cattle which comprises internally administering to the cattle 1α-hydroxycholecalciferol in an amount sufficient to induce said treatment and prophylaxis.

3,879,549

TREATMENT OF BILHARZIOSIS AND FILARIASIS EMPLOYING THE ANTIMONY SALT OF CERTAIN HYDROXY QUINOLINES

Eugéne Riviére, 8 rue J. E. Voisembert, 92-Issy Les Moulineaux; Danyele Yvette Vilarel, 20 rue Marie Amelie, Chantilly-60; Roger Lucien Debrie, 73 rue de la Liberation, 60-Brenouille, and Gerald Paul Marie Henri Loiseau, 146 rue Houdan, 92-Sceaux, all of France

Continuation-in-part of Ser. No. 72,540, Sept. 15, 1970, Pat. No. 3,769,409. This application July 25, 1973, Ser. No. 382,411

Claims priority, application France, Sept. 19, 1969, 69.31912The portion of the term of this patent subsequent to Sept. 15, 1987, has been disclaimed.

Int. Cl. A61k *27/00*

U.S. Cl. 424—245 1 Claim

1. A process for the treatment of bilharziosis or filariasis in human beings which comprises adminstering orally to a human being in need of such treatment an effective amount of the antimony salt of 8-hydroxyquinoline, 6-methyl-8-hydroxyquinoline, 5-fluoro-8-hydroxyquinoline, 5-chloro-8-hydroxyquinoline, 5-nitro-8-hydroxyquinoline, 5-sulpho-8-hydroxyquinoline, 5-chloro-7-iodo-8-hydroxyquinoline, 5,7-dibromo-8-hydroxyquinoline, 5-chloro-7-iodo-6-methyl-8-hydroxyquinoline, or 5,7-dibromo-6-methyl-8-hydroxyquinoline, at a daily dose of 60 to 100 mg of the salt per day.

3,879,550

3,5-BIS(4-PYRIDYLMETHYL)-2H-13,5-TETRAHYDROTHIODIAZINE-2-THIONE USED AS A FUNGICIDE

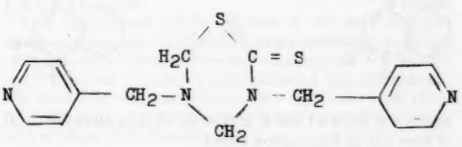
Herman Berenson, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 2, 1973, Ser. No. 356,522

Int. Cl.[2] A01N *9/12*

U.S. Cl. 424—246 4 Claims

1. A method for the protection of plants from fungi comprisiing applying to said plants a fungicidally effective amount in the range of from one to three pounds per acre of the compound:



3,879,551

PHENTHIAZINE DERIVATIVES IN PHARMACEUTICAL COMPOSITIONS

Jean-Claude Rene Georges Blondel, Savigny-sur-Orge; Jean Clement Louis Fouche, Burg-la-Reine, and Claude Georges Alexandre Gueremy, Creteil, all of France, assignors to Rhone-Poulenc S.A., Paris, France

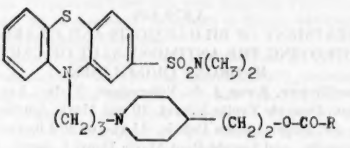
Continuation of Ser. No. 49,192, June 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 717,012, March 28, 1968. This application Sept. 17, 1971, Ser. No. 181,619

Claims priority, application France, Mar. 29, 1967, 67.100663; Mar. 28, 1968, 68.4156

Int. Cl. A61k *27/00*

U.S. Cl. 424—247 3 Claims

1. A pharmaceutical composition which comprises, as active ingredient, a therapeutically active amount of a phenthiazine derivative of the formula:



wherein R represents an alkyl, alkenyl or alkynyl group having 7–17 carbon atoms, in association with a pharmaceutical carrier.

3,879,552

ENHANCED LEARNING ABILITY BY USE OF THIORIDAZINE

John H. Gogerty, Dover, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Sept. 28, 1973, Ser. No. 401,947

Int. Cl. A61k *27/00*

U.S. Cl. 424—247 3 Claims

1. A method for enhancing learning comprising administering to a mammal in which learning is desired to be enhanced 10–200 mg. of Thioridazine or a pharmaceutically acceptable salt thereof.

3,879,553

CONTROL OF RICE BLAST WITH 4-HALO-CARBOSTYRILS AND -ISOCARBOSTYRILS

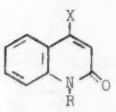
Helen K. Tobol, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 5, 1973, Ser. No. 412,945

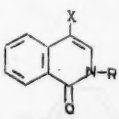
Int. Cl. A01n *9/00, 9/22*

U.S. Cl. 424—258 10 Claims

1. The method of protecting rice plants against rice blast attack which comprises applying to the locus of a rice plant or seed a fungicidally effective amount of a 4-halo-carbostyril or -isocarbostyril compound defined respectively by the following structures



and



where X is Br or Cl and R is H or an alkyl or alkenyl radical of from one to four carbon atoms.

3,879,554

USE OF 1,6-DIMETHYL-8-β-(5-BROMONICOTINOYLOXYMETHYL)-10 α-METHOXYERGOLINE IN TREATING CEREBRAL AND PERIPHERAL METABOLIC VASCULAR DISORDERS

Aldemio Temperilli, Milan, Italy, assignor to Societa' Farmaceutici Italia S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 124,448, March 15, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 347,342

Claims priority, application Italy, Mar. 20, 1970, 22184/70

Int. Cl. A61u *27/00*

U.S. Cl. 424—259 2 Claims

1. A method of inhibiting blood platelet aggregation in the treatment of a cerebral and peripheral metabolic vascular disorder selected from the group consisting of cerebral and peripheral arteriosclerosis, Raynaud's disease, vascular cephalagia and migraine, which comprises administering to a human host an amount of the compound 1,6-dimethyl-8-β-(5-bromo-nicotinoyloxymethyl)-10-α-methoxyergoline effective to inhibit blood platelet aggregation.

3,879,555

METHOD OF TREATING DRUG ADDICTS

Irwin J. Pachter, Fayetteville, and Maxwell Gordon, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 90,058, Nov. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 60,621, Aug. 3, 1970, Pat. No. 3,773,955. This application Aug. 16, 1973, Ser. No. 388,858

Int. Cl. A61r *27/00*

U.S. Cl. 424—260 2 Claims

1. A method for the treatment of drug addicted subjects which comprises oral administration to such subject of an effective amount of a composition consisting essentially of (a) methadone in an amount sufficient to substantially prevent narcotic craving and (b) 1-N-cyclopropylmethyl-7,8-dihydro-14-hydroxynormorphinone in an amount sufficient to induce withdrawal symptoms when said composition is administered parenterally, but insufficient to negate the action of said methadone when the composition is administered orally.

3,879,556

PHARMACEUTICAL COMPOSITIONS CONTAINING A 1,2,3,6-TETRAHYDRO-4-PYRIDYLMETHYL CARBOXYLATE AND METHOD OF USE

Gerhard Walther, Ingelheim am Rhein; Rudolf Bauer, Wiesbaden; Hans Hugo Hübner, and Rolf Banholzer, both of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

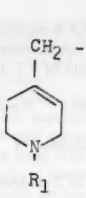
Division of Ser. No. 176,708, Aug. 31, 1971, Pat. No. 3,786,059. This application Nov. 27, 1973, Ser. No. 419,401

Claims priority, application Germany, Sept. 2, 1970, 2043455

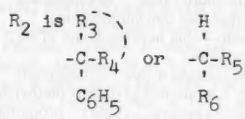
Int. Cl. A61k *27/00*

U.S. Cl. 424—263 8 Claims

1. An anticholinergic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective anticholinergic amount of a racemic mixture of a compound of the formula



wherein R_1 is hydrogen, alkyl of one to eight carbon atoms, chloro-(alkyl of one to two carbon atoms), cyano(alkyl of one to two carbon atoms), hydroxy-(alkyl of one to two carbon atoms), phenyl-(alkyl of one to two carbon atoms), alkenyl of three to four carbon atoms or alkynyl, of three to four carbon atoms,



where R_3 is hydroxyl or, together with R_4 and the carbon atom to which they are attached, a five- to six-membered saturated carbocyclic ring,

R_4 and R_5 are each alkyl of one to four carbon atoms, cycloalkyl of five to six carbon atoms or phenyl, and

R_6 is cycloalkyl of five to six carbon atoms or phenyl,

an optically active antipode component thereof, a methyl halide, methyl sulfate or methyl methanesulfonate quaternary tetrahydropyridinium salt thereof, or a non-toxic acid addition salt of said racemate or optically active antipode component.

3,879,557

COMPOSITIONS FOR PRODUCING β-ADRENERGIC STIMULANT WITH 4-HYDROXY-3-HYDROXYMETHYLPHENYL-2-PIPERIDINYLCARBINOLS

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

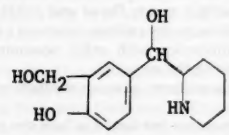
Continuation-in-part of Ser. No. 216,253, Jan. 7, 1972, Pat. No. 3,655,676, abandoned. This application Dec. 3, 1973, Ser. No. 421,465

No. 421,465

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **2 Claims**

1. A pharmaceutical composition having β-adrenergic stimulant activity in dosage unit form comprising a pharmaceutical carrier and from about 250 mcg. to about 50 mg. of a chemical compound of the formula:



or a pharmaceutically acceptable acid addition salt of said compound.

3,879,558

9-AZOLYL-(1)-FLUORENE-9-CARBOXYLIC ACID DERIVATIVES AND THEIR PRODUCTION

Helmut Timmler; Karl-Heinz Büchel, and Manfred Plempel, all of Wuppertal-Eberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

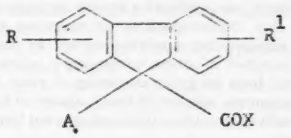
Division of Ser. No. 259,276, June 2, 1972, which is a division of Ser. No. 111,628, Feb. 1, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 398,939

Claims priority, application Germany, Feb. 3, 1970, 2004697

Int. Cl. A61k *27/00*

U.S. Cl. 424—269 **22 Claims**

1. A pharmaceutical composition useful for the treatment of mycotic infections in humans and animals which comprises an antimycotically effective amount of a 9-azolyl-(1)-fluorene-9-carboxylic acid derivative of the formula:



or a pharmaceutically acceptable non-toxic salt thereof, wherein

R and R^1 are the same or different and are hydrogen, lower alkyl, lower alkoxy or halo,

A is 1,2,4-triazolyl, and

X is hydroxyl, lower alkoxy, amino lower alkoxy, a moiety of the formula:

wherein

R^2 is hydrogen or lower alkyl, and

R^3 is hydrogen, lower alkyl, phenyl or phenyl substituted by halo or alkoxy of one to four carbon atoms

in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

3,879,559

SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside, and Robert H. Brink, Jr., Doylestown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 27, 1973, Ser. No. 391,703

Int. Cl. A01n *9/00*

U.S. Cl. 424—270 **9 Claims**

1. A composition for the control of the microorganism *Aerobacter aerogenes* in aqueous systems comprising a mixture of 75 percent of 5-chloro-2-methyl-4-isothiazolin-3-1 chloride and 25 percent 2-methyl-4-isothiazolin-3-1 calcium chloride with bromo-nitrostyrene, wherein the weight ratio of the chloride mixture to the bromo-nitrostyrene ranges from about 95:5 to about 5:95 respectively.

3,879,560

ORGANIC AMINE-ORGANIC ACID ADDITION SALTS TO REDUCE EXCESSIVE SECRETION OF SEBUM ON HUMAN SKIN AND SCALP

Gregoire Kalopissis, Paris, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 801,840, Feb. 24, 1969, abandoned, and a continuation-in-part of Ser. No. 858,161, Sept. 15, 1969, Pat. No. 3,671,643. This application Nov. 29, 1971, Ser. No. 203,038

Claims priority, application Luxembourg, Feb. 23, 1968, 55553; Belgium, June 3, 1969, 74877; France, June 21, 1967, 67.111396; July 28, 1967, 67.116160; Luxembourg, Dec. 22, 1965, 50125; France, Jan. 29, 1964, 67.961897; Luxembourg, Apr. 19, 1968, 55935; Feb. 19, 1969, 58042; May 12, 1969, 58634; Oct. 28, 1971, 64174

Int. Cl. A61k *27/00*

U.S. Cl. 424—316 **4 Claims**

1. A cosmetic composition for topical application to human scalp and skin characterized by an excessive secretion of sebum to improve the condition thereof by reducing said excessive secretion of sebum comprising a solution in a solvent selected from the group consisting of water, lower alkanol and an aqueous solution of lower alkanol of 0.1 to 5 percent by weight of an active compound selected from the group consisting of:

5-amino-3-thia hexanedioate of 2-benzylthioethylammonium,

5-acetamido-3-thia-hexanedioate of di(2-benzylthioethylammonium),

5-amino-3-thia hexanedioate of 2-(3-alanylthio) ethylammonium,

5-amino-3-thia hexanedioate of 2-methylthioethylammonium,

5-amino-3-thia hexanedioate of 3-benzylthiopropylammonium,

2-amino-4-thia heptanedioate of 2-benzylthioethylammonium,

5-amino-3-thia hexanedioate of 2-(2,2,-dimethoxyethylthio)-ethylammonium,

2-acetamido-3-benzylthio-propionate of 2-methylthioethylammonium,

5-benzamido-3-thia-hexanedioate of di(2-benzylthioethylammonium),

5-p-toluenesulfonamido-3-thia-hexanedioate of di(2-benzylthioethylammonium),

5-p-acetamidobenzenesulfonamido-3-thia-hexanedioate of di- (2-benzylthioethylammonium),

5-p-acetamidobenzamido-3-thia-hexanedioate of di- (2-benzylthioethylammonium),

2-acetamido-4-thia-heptanedioate of di(2-methylthioethylammonium),

2-amino-4-thia decanedioate of 2-benzylthioethylammonium,

5-amino-3-thia hexanedioate of 2-benzylthiopropylammonium,

5-amino-3-thia hexanedioate of 2-benzylthio-2-methylpropylammonium,

5-amino-3-thia hexanedioate of 2-phenylthioethylammonium,

5-amino-3-thia hexanedioate of 2-t-butylthioethylammonium,

5-amino-3-thia hexanedioate of 2-tritylthioethylammonium,

5-amino-3-thia hexanedioate of 2-(2-butenylthio) ethylammonium,

5-amino-3-thia hexanedioate of 2-(2-hydroxyethylthio)-ethylammonium,

5-amino-3-thia hexanedioate of 2-(2,3-dihydroxypropylthio) ethylammonium,

3-benzylthio-2-phenylacetamido propionate of 2-methylthioethylammonium,

2-acetamido-3-tritylthiopropionate of 2-methylthioethylammonium,

2-acetamido-3-benzhydrylthio propionate of 2-methylthioethylammonium,

5-amino-3-thia hexanedioate of 6-methanesulfonamido-6-ethoxy carbonyl-4-thia hexylammonium,

2-acetamido-4-thia-nonanedioate of 2,2′-thio bis (ethylammonium),

di-(β-benzylthioethylammonium) 5-p-acetamido-3-thia-hexanedioate,

5-amino-3-thia acid hexanedioate of 2-octadecylthio ethylammonium,

2-amino-4-thia heptanedioate of 2-undecenylthio ethylammonium,

2-amino-4-thia nonanedioate of 2-(3-hydroxypropylthio) ethylammonium,

di-(5-amino-3-thia hexanedioate) of 3-thia-1,6-hexanediammonium,

2-amino-4-thia octanedioate of 2-(β-ureido ethylthio)-ethylammonium,

5-amino-3-thia hexanedioate of 2-(3-methanesulfonamido propylthio) ethylammonium,

5-amino-3-thia hexanedioate of 2-(p-phenylbenzylthio) ethylammonium,

5-tetradecanamido-3-thia hexanedioate of di(2-β-hydroxyethyl thio ethylammonium),

2-crotonamido-4-thia heptanedioate of di(2-tertiobutylthio ethylammonium),

2-butanesulfonamido-4-thia octanedioate of 2,2′-(2,3-dihydroxy-1,4-butanediyl dithio) diethylammonium,

2-formamido-3-(propyn-2-ylthio) propionate of 3-(1-naphthyl thio) propylammonium,

3-methylthio-2-trifluoroacetamido propionate of 2-oleylthio ethylammonium,

2-o-chlorobenzylthiomethyl-3-aza-4-oxo heptanedioate of 5,5′-sulfonyl bis (3-thia pentylammonium),

2-acetamido-3-p-methylthiophenylthio propionate of 2-(2,4,6-trimethyl benzylthio) ethylammonium,

5-amino-3-thia hexanedioate of 2-(3,4-dichlorobenzylthio) ethylammonium,

2-butyramido-3-isopropylthio propionate of 2-(2,6-dichloro benzylthio) ethylammonium,

2-acetamido-3-(3-alanylthio) propionate of 2-m-fluorobenzylthio ethylammonium,

6-amino-3-thia heptanedioate of 2-p-dimethylaminobenzylthio ethylammonium,

2-hexanamido-di-(p-methoxyphenyl)-3-methylthio propionate of 2-(2,3-dihydroxy propylthio) ethylammonium,

5-amino-3-thia hexanedioate of 2-(o-chlorobenzylthio) ethylammonium,

5-amino-3-thia hexanedioate of 2-(p-bromobenzylthio) ethylammonium,

5-acetamido-3-thia hexanedioate of di-2-(2,4-dichlorobenzylthio) ethylammonium, and

2-acetamido-3-p-fluorobenzylthio propionate of 2-hexadecylthio ethylammonium.

3,879,561

VACUUM DRIED CONDIMENTS

Richard G. Smith, Arlington Heights, and James K. Stewart, Palatine, both of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed May 30, 1972, Ser. No. 257,525

Int. Cl. A23l *1/26*

U.S. Cl. 426—533 **20 Claims**

1. A method for preparing an edible condiment base composition possessing a meaty flavor and suitable for use as a condiment additive in dry culinary mixtures or as a seasoning adjunct in combination with other seasoning agents, said method comprising the steps of:

A. providing a uniform, aqueous medium comprised of:

a. water,

b. a proteinaceous portion of at least one protein member selected from the group consisting of an alpha-amino acid, a protein hydrolyzate, alpha-amino acid salt and protein hydrolyzate salt,

c. a carbohydrate portion containing a starch hydrolyzate as a principal carbohydrate constituent with at least 5% by weight of said carbohydrate portion being a fermentable sugar,

wherein on a dry solids weight basis the protein portion and said carbohydrate portion are the major dry solids (on a weight basis) of said aqueous medium and the aqueous medium contains at least 10% by weight water and having a pH between the range of about 4 to less than 7;

B. simultaneously drying and reacting together the protein portion and carbohydrate portion under subatmospheric pressure at a temperature ranging from about 125°F. to about 280°F. for a period of time sufficient to reduce the total water content of the aqueous medium to less than 4% by weight and thereby provide a dried mass having a meaty flavor; and

C. granulating the resultant dried mass into a multiplicity of free flowing, condiment particles.

3,879,562

FLAVORING FOODSTUFFS WITH A THIOESTER

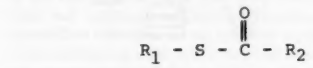
Alan O. Pittet, Atlantic Highlands; Denis E. Hruza, Bricktown; Ira Katz, Elberon; Cynthia J. Mussinan, Bricktown, and John V. Pascale, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 195,829, Nov. 4, 1971, abandoned. This application Dec. 12, 1972, Ser. No. 314,381

Int. Cl. A23l *1/26*

U.S. Cl. 426—535 **8 Claims**

1. A process for altering the flavor of a foodstuff which comprises adding thereto a small flavor-altering amount of at least one thioester having the formula



wherein R is alkyl, aryl, aralkyl, alkaryl, cycloalkyl or alkenyl and R_2 is alkylthioalkyl, aralkyl, alkaryl or aryl, R_1 containing at least two carbon atoms when R_2 is phenyl or an alkyl group containing three or four carbon atoms.

3,879,563

REFRIGERATED BISCUIT DOUGH

Don R. Tucker, Golden Valley, and Richard E. Willits, Edina, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Apr. 2, 1973, Ser. No. 347,099

Int. Cl. A21d *13/00*

U.S. Cl. 426—128 **31 Claims**

1. Fresh biscuit dough packed in refrigerated dough containers which is stable under refrigerated storage conditions for at least 45 days comprising, in parts by weight:

a. from 43 parts to 53 parts of a farinaceous material containing from 8.5 to 10.5 percent wheat protein;

b. from 12 parts to 21 parts shortening, said shortening comprising from 6 parts to 12 parts of shortening in discrete chip form and from 6 parts to 11 parts plastic shortening;

c. water in an amount sufficient to provide a machinable dough;

d. chemical leavening in an amount sufficient to expand the dough and provide a positive pressure in the refrigerated dough container;

said biscuit dough, after mixing but prior to packing, having an Extensigraph value for maximum resistance to extension of less than 1,000 Brabender Units and an Extensigraph value for maximum extension of less than 100 mm and having a $\Delta BU/-BU_{MAX}$ calculated from Farinograph data of 0.20 to 0.45 wherein ΔBU is the difference between the maximum Farinograph viscosity measurement in Brabender Units and the minimum Farinograph viscosity measurement in Brabender Units and BU_{MAX} is the maximum Farinograph viscosity measurement in Brabender Units.

3,879,564

METHOD OF MAKING A FROZEN PIZZA SHELL AND PIZZA

Antonio Cocozzella, 13419 Sherwood Forest Dr., Silver Spring, Md. 20904

Filed June 27, 1973, Ser. No. 374,092

Int. Cl. A23l *1/10*

U.S. Cl. 426—283 **4 Claims**

1. A method of making frozen pizza shells from a batch of dough, comprising:

a. covering the dough to substantially prevent contact with the environmental air and causing the dough to rise a first time in a controlled environment having a temperature of approximately 80°F and a humidity of approximately 85% for approximately 45 minutes;

b. dividing the dough into a plurality of portions of approximately equal weight;

c. covering the plurality of portions to substantially prevent contact with the environmental air and causing the dough forming the plurality of portions to rise a second time in said controlled environment for approximately 45 minutes;

d. forming a plurality of pizza shells from the plurality of portions;

e. causing the dough in the form of the pizza shells to rise a third time in said controlled environment for approximately 15 minutes;

f. baking the pizza shells at a temperature of approximately 300°F for approximately 3 minutes to form thereby an outer crust portion on each shell which encases a substantially raw core portion thereof; and

g. freezing the pizza shells.

3,879,565

COFFEE BREWING BAG AND METHOD

William J. Einstman, Port Chester, N.Y.; Warren C. Rehman, Montvale, N.J., and Frank M. Plant, Beacon, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 5, 1971, Ser. No. 186,804

Int. Cl. A23f *1/08*

U.S. Cl. 426—302 **2 Claims**

1. A process for making a coffee brewing bag comprising spraying an aqueous emulsion of dimethylpolysiloxane onto the surface of roasted and ground coffee to obtain a dimethylpolysiloxane level of from 20 to 1,600 ppm by weight of the coffee and then packaging the coffee in a filter paper infusion bag.

3,879,566

PROCESS FOR PREPARING A QUICK-COOKING RICE

James Patrick Cox, and Jeanne Marie Cox, both of Coquitlam, British Columbia, Canada, assignors to Martin, Robertson & Bain Ltd., Vancouver, British Columbia, Canada

Filed Apr. 5, 1971, Ser. No. 131,423

Int. Cl. A23c *1/00*

U.S. Cl. 426—309 **19 Claims**

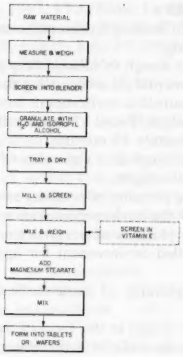
1. The method of preparing a quick-cooking rice product consisting essentially in the steps of increasing the water absorptivity of rice by heating rice to a temperature within the range of 185° F. to 280° F. at a pressure at least as great as atmospheric pressure for a period of 2 minutes to 70 minutes and simultaneously treating such rice with aqueous chemical solution consisting of alkali metal phosphate, excluding trisodium phosphate, said solution containing said alkali metal phosphate in the proportion of 0.001% to 7% by weight of the dry rice to be treated, and thereafter drying the rice.

3,879,567

METHOD OF PREPARING A DRIED HONEY TABLET

Reese D. Verner, Phoenix, Ariz., assignor to Honey-Tein Products, Inc., Phoenix, Ariz.

Filed Feb. 11, 1974, Ser. No. 441,267
Int. Cl. A23l 1/08
U.S. Cl. 426—311 7 Claims



1. The method of preparing a product embodying honey in a dried form comprising the steps of mixing first ingredients comprising about 280 pounds of a dried composition of honey and a gelatinized starch material with about 10 pounds of non-fat dried milk, blending said first ingredients until they pass through a 12 to 14 mesh screen, sequentially adding about two gallons of water and about 2 gallons of isopropyl alcohol to said first ingredients to granulate said first ingredients, said granulated first ingredients then being dried at approximately 45 degrees Centigrade, blending said granulated first ingredients to remove all lumps, screening said granulated first ingredients through a 12 to 14 mesh screen, mixing said first ingredients with about 1500 grams of magnesium stearate to form second ingredients, and forming said second ingredients into tablet form.

3,879,568

PROCESS FOR DEHYDRATING BANANAS AND BANANA PRODUCT

Nancy N. R. Luh, Cambridge, and James K. Palmer, Sharon, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 25, 1973, Ser. No. 373,104
Int. Cl. A23b 7/06
U.S. Cl. 426—541 12 Claims

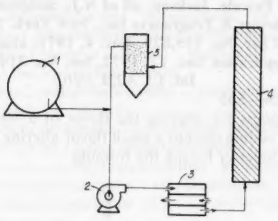
1. The process for preparing a dehydrated banana having substantial portion of the cellular structure of a ripe banana which comprises slicing a ripe banana lengthwise 1 to 3 times to form a plurality of banana slices having the carpel region exposed along their length, to form slices having the same size contacting said slices with steam to increase the temperature of the interior of said slices up to about 85°C to 95°C for about ½ to 4 minutes, said slices being contacted with steam prior to said slices being substantially discolored due to enzymic discoloration, and dehydrating said steam blanched slices in a relatively dry atmosphere at a temperature from about 50°C to 65°C for a period of time sufficient to reduce the water content of the banana slices to less than about 20 weight percent.

3,879,569

PROCESS FOR THE DECAFFEINATION OF RAW COFFEE

Otto Vitzthum, Bremen, and Peter Hubert, Bremen-Lesum, both of Germany, assignors to HAG Aktiengesellschaft, Bremen, Germany

Filed Mar. 12, 1973, Ser. No. 340,187
Claims priority, application Germany, Mar. 14, 1972, 2212281
Int. Cl. A23f 1/10
U.S. Cl. 426—427 8 Claims



1. A process for the decaffeination of raw coffee comprising moistening raw coffee to a moisture content of from about 10 to 60% extracting the raw coffee with liquid carbon dioxide at a pressure above the critical pressure of carbon dioxide and at a temperature wherein said carbon dioxide is maintained in a liquid state and below about 31.4°C.

3,879,570

DRY ROASTING MILO

Merritt J. Fisher, 160 West 6th Ave. North, Clear Lake, Iowa 50428

Filed Sept. 4, 1973, Ser. No. 394,392
Int. Cl. A23l 1/36
U.S. Cl. 426—466 12 Claims

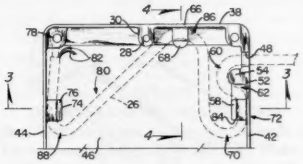
1. A method of dry roasting milo in which only a small percentage of the kernels are popped and which avoids the inherent stickiness of milo normally associated with high temperature heating of milo, said method comprising introducing milo having a natural moisture content of about 18% or less into a heating zone, preventing substantial air intake into said zone, agitating said milo, and while agitating, heating said zone by indirect heating means to a temperature of at least 750° fahrenheit but below the scorching and caramelizing temperature of said milo, for a time sufficient to dry roast said milo, but prevent the scorching thereof, and withdrawing from said zone said dry roasted milo having only a small percentage of popped kernels.

3,879,571

CABLE MOUNT FOR SPEAKER INSTALLATION

Samuel M. Reed, 2121 Routt, Lakewood, Colo. 80215

Filed May 7, 1973, Ser. No. 358,112
Int. Cl. H05k *5/00*
U.S. Cl. 174—65 R 10 Claims



1. In a speaker system wherein a communication cable is inserted through an opening into a hollow speaker housing and is connected at one end to a contact terminal on an interior wall of said housing opposite to the opening, the improvement comprising first retention means projecting inwardly from an inner wall surface of said speaker housing adjacent to the opening and adapted to form a first reverse bend in the cable as it enters the housing, second retention means spaced inwardly from the wall surface of said speaker housing in adjacent spaced relation to the first retention means and on a side of the first retention means opposite to the opening, said communication cable undergoing a first reverse bend around said first retention means as it enters the housing through the opening and undergoing a second reverse bend around said second retention means substantially at 180° to the direction of the first reverse bend, and third retention means on the inner wall surface of said speaker housing substantially at 90° to said first retention means adapted to retain the cable, said cable undergoing a third reverse bend around said third retention means substantially at 180° to the second bend in the cable, whereby pulling force applied to the cable will be absorbed by the housing to prevent said pulling force from separating the cable from its connection to said contact terminal. said first, second and third bracket means in cooperation with said cable forming two mutually perpendicular substantially S-shaped configurations in the cable such that pulling forces applied to the cable exteriorally of said housing will be absorbed by the housing to prevent the pulling forces from separating the cable from its connection to said contact terminal;

said housing comprising two releasable half sections split along a plane intersecting the top portion of said open notches of first, second and third brackets, said first half section containing said first, second and third brackets and said second half section having substantially thicker walls to generally cover said open U-shaped notches of said brackets thereby wedging said cable into said notches.

3,879,572

PRINTED ELECTRIC CIRCUIT CONTAINING POLYBENZIMIDAZOLE PRINTING INK COMPOSITION

Magozo Shoji, Kadoma, and Tamiharu Noguchi, Neyagawa, both of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Division of Ser. No. 89,342, Nov. 13, 1970, abandoned. This application Sept. 1, 1972, Ser. No. 285,659
Claims priority, application Japan, Jan. 21, 1970, 45-5803
Int. Cl. H05k *1/10*
U.S. Cl. 174—68.5 6 Claims

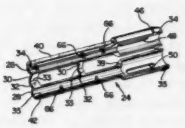
1. A printed electric circuit comprising an insulative base, said base comprising a polybenzimidazole, and bonded thereto in a predetermined circuit pattern a printing ink composition comprising a polybenzimidazole matrix and an electric resistive or conductive material dispersed therein.

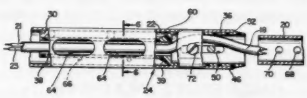
3,879,573

ELECTRICAL DEVICE HANDLE AND PROTECTOR THEREFOR

Stephen Jeffrey Ehrlich, Randallstown, Md., assignor to The Black & Decker Manufacturing Company, Towson, Md.

Filed Dec. 5, 1973, Ser. No. 421,983
Int. Cl. B25g *1/04*; A01d *1/14, 35/20*
U.S. Cl. 174—46 23 Claims





1. An electrical device handle comprising:

a. a first tubular member having an air inlet therethrough:

b. a second tubular member; and

c. a protective connector having first and second longitudinally aligned tubular portions, said first portion having larger outside diameter than said second portion, said second tubular portion being fitted within said first tubular member and one end of said second tubular member being fitted within said first tubular portion, the outside diameter of said second tubular portion bueing smaller than the inside diameter of said first tubular member defining a passageway therebetween, said passageway communicating with said air inlet, said connector being adapted to receive an electrical wire extending throughout the length thereof.

11. In an electrical device comprising a housing for an electric motor and driven output means, a hand grip portion including an electric switch, a multi-section tubular handle extending between and connected to said housing and said hand grip, and a plurality of electric wires extending within said handle, the improvement comprising a protective connector joining consecutive sections of said multi-section tubular handle, said connector comprising first and second longitudinally aligned portions, said second portion having at least a longitudinal section recessed radially with respect to the outer surface of said first portion, a passageway, extending longitudinally through said first and second portions receiving said electrical wires therein, said first portion receiving a first section of said tubular handle and said second portion being mounted within a second section of said tubular handle.

15. A protective connector for an electrical device handle comprising first and second axially aligned portions, said first portion having a larger outside diameter than said second

portion, a plurality of circumferentially spaced projections extending outwardly from said second portion, the outer edge of said projections being substantially coplanar with the outer surface of said first portion, said first and second portions each being formed of two halves joined together along a parting line, said second portion of each half having at least one finger on the outer surface thereof extending tangentially across said parting line and overlapping the other half of said second portion, said first and second portions having a central opening therethrough adapted to receive an electrical wire extending throughout the length thereof.

19. A blank for forming a protective connector for an electrical device handle having two parallel, spaced apart halves, each of said halves having first and second longitudinally aligned channel portions, the outside transverse dimension of the first portion being larger than the corresponding dimension of the second portion, said first and second halves each having a first projection extending transversely from the second portion thereof, the distal end of the first half first projection being joined to the distal end of the second half first projection along a hinge line, folding said blank along said hinge line effects closing said first half onto said second half, said halves meeting along matching parting surfaces and forming two longitudinally aligned tubular members having a longitudinal passageway therethrough for receipt of an electrical wire throughout the length thereof, each of said halves having at least one finger attached to the second portion thereof adjacent the parting surface and projecting outwardly to overlap the other half.

3,879,574

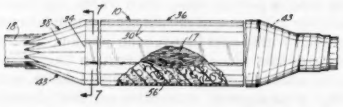
CABLE SPLICE ENCLOSURE

Manuel Filreis, and Aelred D. Driscoll, both of 3M Center, Saint Paul, Minn. 55101

Division of Ser. No. 228,031, Feb. 22, 1972, abandoned. This application Apr. 10, 1974, Ser. No. 459,615

Int. Cl. H02g *15/08*

U.S. Cl. 174—76 **6 Claims**



1. An enclosure attached to an electrical cable and extending around a splice or termination in the cable, said enclosure comprising a stiff, resilient, polymeric sheet having latticed grooves on one surface to reduce its thickness and define intersecting sets of spaced parallel narrow strips connecting segments of the sheet, said sheet being bent along some of said strips to shape the enclosure, means attaching edges of the sheet together and means attaching said sheet to the cable.

3,879,575

ENCAPSULATING COMPOUND AND CLOSURE

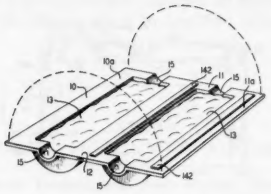
Donald Patrick Dobbin, Clark; Charles Anthony Fritsch, Mendham, both of N.J., and Raffaele Antonio Sabia, Atlanta, Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 21, 1974, Ser. No. 444,344

Int. Cl. H02g *15/08*

U.S. Cl. 174—92 **6 Claims**

1. In combination: a plurality of insulated conductor splice points enveloped in a waterproof encapsulating agent comprising from 84.5 to 92.5 parts by weight of mineral oil, from 0.5 to 3.0 parts by weight styrene-isoprene-styrene block



copolymer, and from 6.0 to 13.0 parts by weight of polyethylene having a weight average molecular weight above 2000.

3,879,576

SYNCHRONIZING SIGNAL SEPARATING CIRCUIT

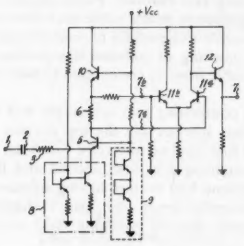
Takashi Okada, Yamato-shi Kanagawa-ken; Hirouyki Sumiya, Tanaski-shi Tokyo, and Tomoyoshi Imayasu, Yamato-shi Kanagawa-ken, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 2, 1973, Ser. No. 346,779

Claims priority, application Japan, Apr. 5, 1972, 47-34160; May 31, 1972, 47-54077

Int. Cl. H04n *5/08*; **H03b** *1/00*

U.S. Cl. 178—7.3 S **5 Claims**



1. A circuit for separating synchronizing signals from a composite signal which further includes information signals interposed between successive synchronizing signals, comprising an amplifying transistor receiving said composite signal, self-biasing means including a capacitor for applying a self-bias to said amplifying transistor in response to said composite signal so that said amplifying transistor is rendered conductive only upon said synchronizing signals in said composite signal, constant current circuit means connected with said self-biasing means for maintaining said self-bias at a substantially constant value at the conclusion of each of said information signals irrespective of the value of the latter, a load resistor connected to said amplifying transistor, means for supplying an operating voltage to said amplifying transistor through said load resistor, bias regulating means connected in series with

said load resistor and differential amplifier means having a first input coupled to said load resistor and a second input coupled to said bias regulating means for deriving at the output of said differential amplifier means separated synchronizing signal pulses in correspondence with said synchronizing signal in the received composite signal.

3,879,577
DATA TRANSMISSION SYSTEM

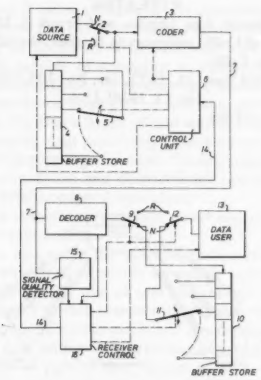
Max Progler, Dellmensingen, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Sept. 24, 1973, Ser. No. 399,695

Claims priority, application Germany, Sept. 23, 1972, 2246826

Int. Cl. G08c *25/00*; **H04l** *1/10*; **G06f** *11/00*

U.S. Cl. 178—23 A **5 Claims**



1. In a system for the secure transmission of binary coded data in blocks, which system includes a transmitter containing a source of such data blocks, a receiver containing a data user, coding means associated with the transmitter and arranged to receive successive data blocks and to code each such block to constitute a code block containing error test information, means defining a forward transmission channel connected to the output of the coding means for conveying such code blocks serially from the transmitter to the receiver, means defining a return channel for conveying signals from the receiver to the transmitter, and error correction means including test means in the receiver for testing each code block received from the transmitter for transmission errors and for supplying a correct receipt signal to the return channel for each code block which is correctly received and an error receipt signal to the return channel for each code block received with errors, the loop travel time between transmission of a given code block from the transmitter and arrival at the transmitter of the receipt signal corresponding to that given code block being substantially equal to the time required for transmitting a succession of L blocks, first storage means in the transmitter for storing the data associated with L successive data blocks at any given time and connected to receive the data blocks as they are transmitted from the source, transmitter control means in the transmitter operatively connected to the return channel and to the first storage means for retransmitting from the first storage means, and over the forward transmission channel, each code block for which an error receipt signal is supplied to the return channel, second storage means in said receiver, said second storage means having a capacity of at least L-1 blocks and being normally connected to the output of said forward transmission channel for storing each block which it receives and delaying it by a delay period at least equal to the loop travel time, first signal flow directing means connected in said receiver for normally connecting the data user to the output of said second storage means and arranged to selectively connect the data user alternatively to the output of said forward transmission channel, and receiver control means operatively connected to said test means and to said signal flow directing means for causing said signal flow directing means to alternatively connect the data user to the output of said forward transmission channel at a selected time after production of an error receipt signal, which selected time is substantially equal to loop travel time, whenever said test means is supplying a correct receipt signal, said receiver control means also being connected to said transmitter control means for causing retransmission, upon arrival at said transmitter of an error receipt signal, of only that block to which such receipt signal relates, the improvement wherein:

said test means comprise decoding means connected in series with said forward transmission channel so that the output of said decoding means constitutes the output of said forward transmission channel, said decoding means serving to decode each received code block to reestablish the corresponding uncoded data block, the output of said decoding means being connected to said first signal flow directing means in a manner such that said decoding means is connected in series between said forward transmission channel output and said first signal flow directing means; and

said transmitter further comprises: connecting means permanently establishing a common input connection connected to the input of said coding means and the input of said first storage means; second signal flow directing means operatively connected to be controlled by said transmitter control means and arranged to normally connect said common input connection to the output of said source of data blocks as long as correct receipt signals are being supplied to said transmitter control means and to selectively and temporarily connect the output of said first storage means to said common input connection, for a time equal to that for transmitting a complete code block, upon arrival of an error receipt signal at said transmitter control means;

whereby production of an "error" receipt signal will result in retransmission of the entire code block to which such signal relates and the retransmitted data block will reach the data user at exactly the same time that the originally transmitted data block would have reached the data user if it had been correctly received.

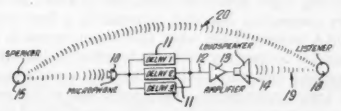
3,879,578
SOUND MASKING METHOD AND SYSTEM

Theodore Wildi, 1365 de Longuevil, Quebec, Canada (6)

Filed June 18, 1973, Ser. No. 370,832

Int. Cl. H04m *1/19*

U.S. Cl. 179—1.5 M **11 Claims**



1. A method of masking sound comprising the steps of

i. receiving in an area an original sound signal which has to be masked,

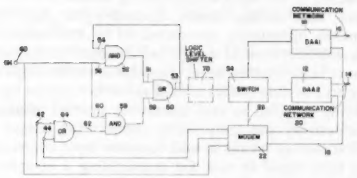
ii. delaying said original sound signal two or more times wherein to produce a time delayed substantially unintelligible signal having two or more delayed original signal components each one following the other at specific time intervals,
iii. amplifying said time-delayed unintelligible signal, and
iv. emitting said amplified time-delayed unintelligible signal outside said area whereby said original sound signal will combine in free space with said amplified time-delayed signal to produce a substantially unintelligible sound outside said area.

3,879,579

AUTOMATIC DIRECT ACCESS ARRANGEMENT SELECTOR

Richard D. Fretwell, Grove City, Ohio, assignor to MI², Incorporated, Columbus, Ohio

Filed Mar. 21, 1973, Ser. No. 343,208
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 DP **10 Claims**



1. A circuit for selecting and alternatively connecting a data terminal to one of two direct access arrangement (DAA) terminal units, said data terminal including a ring detector connected to a first of said DAA units for shifting from a first to a second logic level in response to a ring signal and including an OH circuit for shifting its output from a first to a second logic level when said data terminal is off hook; said circuit comprising:

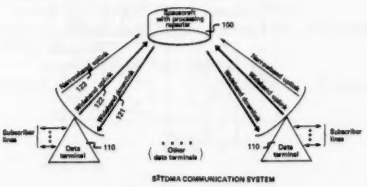
a. a multiple pole, double throw, electrically operated switch means connected to said DAA terminal units and having wiper terminals connected to said data terminal, for connecting said data terminal to a first one of said DAA terminal units when said switch means is actuated and for connecting said data terminal to the other DAA terminal unit when said switch means is not actuated; and
b. logic circuit means connected to said switch means and having inputs connected to the output of said ring detector and the output of said off-hook (OH) circuit for actuating said switch means in response to the simultaneous existence of a ring signal at said ring detector and an on hook state and for holding said switch means in an actuated state in response to simultaneous existence of an off hook state and an actuated switch means.
c. said logic circuit means further including a first transistor switch having its input connected to said OH circuit for being turned on in response to an off hook state and for being turned off in response to an on hook state;
d. a second transistor switch series connected to said first transistor switch and having its input effectively connected to the output of said logic circuit means for being turned on when said switch means is activated;
e. a third transistor switch connected parallel to said series connected first and second transistor switches and having its input connected to said ring detector for being turned on in response to a ring state at said ring detector; and
f. a diode connecting the input of said third transistor switch to the node intermediate the first and second transistor switches.

3,879,580

DATA TERMINAL FOR USE WITH TDMA PROCESSING REPEATER

Leslie H. Schlosser, Los Angeles, and Frank J. Moreno, Torrance, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 24, 1972, Ser. No. 309,325
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **2 Claims**



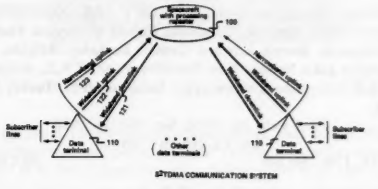
1. In a data terminal adapted for use in a time division multiple access communication system, the combination comprising:

means for converting incoming user signals into respective digital words;
means for multiplexing each of said digital words into respective time slot data at respective pre-assigned time slot times;
means for transmitting said respective time slot data as a burst of data having a preamble comprising a data-free guard time interval, fixed digital data for permitting a processing repeater to acquire bit and word synchronization with said data burst, and variable digital call request data for use by said processing repeater, as an uplink burst transmission at a first given data rate during said pre-assigned time slot times;
means for receiving, demodulating and maintaining synchronization with an essentially continuous downlink transmission free from said guard time intervals at a second data rate slower than said given data rate;
means for identifying pre-assigned channels within said downlink transmission;
means for demultiplexing data in each of said pre-assigned channels into a respective digital word; and
means for converting said digital word into an outgoing user signal.

3,879,581
PROCESSING REPEATER FOR TDMA COMMUNICATION SYSTEM

Leslie H. Schlosser, Los Angeles, and James B. Reeves, Reseda, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 24, 1972, Ser. No. 309,371
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **6 Claims**



STDMA COMMUNICATION SYSTEM

1. In a time division multiple access communication system having a plurality of data terminals, each terminal capable of transmitting an uplink burst of data within an assigned time slot, and all capable of receiving an essentially continuous stream of downlink data, a processing repeater for receiving a burst transmission from one of said data terminals and for transmitting it within a frame of said stream of data to another of said terminals, said processing repeater comprising:

means for generating a common timing standard;

means for receiving and demodulating uplink transmission bursts within assigned time slots;

means for detecting a predetermined unique word within each of said bursts;

means for measuring the synchronization error of the detected unique word within an uplink transmission burst from a particular one of said plurality of data terminals with respect to said common timing standard; and

means for encoding the measured synchronization error as digital data within a synchronization and control field provided as part of said stream of data, whereby said particular data terminal is provided an indication of the timing correction required to maintain synchronization between the data bursts transmitted by said terminal and said common timing standard generated by said processing repeater.

3,879,582
DATA LOOP COMMUNICATION SYSTEM

Hugh Edward White, Pennington, and Nicholas Frank Maxemchuk, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 1, 1974, Ser. No. 447,265
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AL **9 Claims**

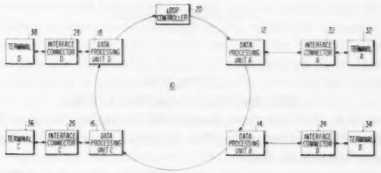
1. A loop digital data communications system comprising:

an electrical conductor forming at least one closed loop;

a plurality of data processors electrically connected in series relation in said loop for transmitting and receiving digital information signals to and from said loop, each one of said data processors including means for transmitting and receiving said digital information signals at a selected one of a plurality of synchronous data rates;

a plurality of data terminal devices each one being operatively coupled to a corresponding one of said data processors, each of said devices providing and receiving digital signals corresponding to said digital information signals, said terminal devices operating at any one of said plurality of synchronous data rates; and

a loop controller connected in said loop and in series with said plurality of data processors, for providing framed time division multiplexed channels for communication between said terminal devices, through the corresponding data processors, said loop controller including means for



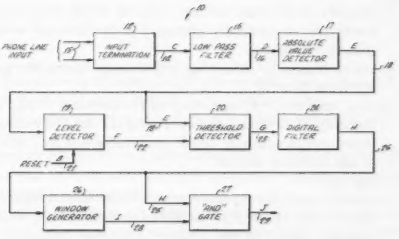
providing a loop time delay such that each of said data processors transmits and receives said digital information signals in a selected channel over successive frames;

a given data processor establishing a connection with another data processor by selecting the appropriate time division multiplexed channel, said given data processor and said other data processor operating at the same data rate.

3,879,583
RECONSTRUCTION OF TELEPHONE DIAL SIGNALS

Ernest F. Rooks, El Monte, Calif., assignor to K'Son Corporation, Orange, Calif.

Filed Aug. 17, 1973, Ser. No. 389,238
Int. Cl. H04q *1/36*
U.S. Cl. 179—16 E **9 Claims**



1. Apparatus for reconstructing a telephone dial signal of the type consisting of a series of interruptions of a DC signal on a conventional telephone line comprising:

means for receiving signals from said telephone line;

means responsive to said receiving means for continuously generating and sustaining a reference voltage level which is a fixed percentage of the peak value of said signals received from said telephone line;

means responsive to said receiving means and said reference voltage level generating means for providing an output, on a real time basis, whenever said received signal level exceeds said reference voltage level, at least one output occurring at the beginning and at the end of each interruption of said dial signal; and

means responsive to said output providing means for converting multiple outputs occurring at the beginning and at the end of each interruption of said dial signal into unitary output signals occurring at the beginning and at the end of each said interruption.

3,879,584

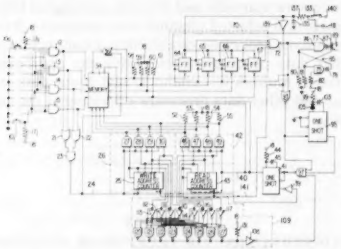
TRAIN PULSE GENERATOR

Edward J. McCabe, and Donald E. Westphal, both of Wellsboro, Pa., assignors to Mek-Tronix Laboratories Corporation, Mansfield, Pa.

Continuation-in-part of Ser. No. 337,190, March 1, 1973. This application Sept. 17, 1973, Ser. No. 397,782

Int. Cl. H04m *1/30*

U.S. Cl. 179—90 K **17 Claims**



1. An apparatus for generating trains of pulses corresponding to selected numbers comprising

a plurality of switches having contacts which may be selectively and sequentially operated in accordance with the selected numbers;

memory means for receiving and storing representations of numbers therein;

means, responsive to operation of the contacts of any of the plurality of switches, for operating the memory means to store representations of the respective selected numbers in the memory means;

a register;

means for applying representations of the stored representations, in the same order as stored in the memory, from the memory means to the register to produce related counts in the register;

oscillator means for serially generating pulses;

first control means for enabling the oscillator means in response to the application of a representation of a stored representation to the register and for disabling the oscillator means after a train of pulses relating to the count in the register have been generated; and

second control means, responsive to the first control means disabling the oscillating means, for operating the applying means to apply a representation of a stored representation from the memory means to the register,

said means for operating the memory means including delay means for preventing the storing of the representations of the respective selected numbers in the memory means during an initial period of operation of the contacts during which the contacts are subject to irregular operation.

3,879,585

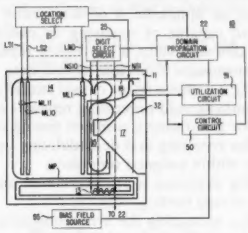
SINGLE WALL DOMAIN MEMORY ARRANGEMENT

Andrew Henry Bobeck, Chatham; Robert Frederick Fischer, Livingston; Joseph Edward Geusic, Berkeley Heights, and Terence John Nelson, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 20, 1974, Ser. No. 443,960

Int. Cl. H04m *1/46*

U.S. Cl. 179—90 BB **20 Claims**



1. Magnetic apparatus comprising a layer of material in which single wall domains can be moved, and a pattern of elements coupled to said layer for defining therein a plurality of minor loops and a major path for the movement of domains therealong responsive to a magnetic field reorienting in the plane of said layer, said minor loops being closely spaced with respect to associated stages of said major path at control positions therebetween, first means for controllably annihilating domains at a selected one of said control positions, second means for controllably replicating domains at a selected one of said control positions, and means responsive to first and second control signals for activating said first and second means, respectively.

3,879,586

TACTILE KEYBOARD SWITCH ASSEMBLY WITH METALLIC OR ELASTOMERIC TYPE CONDUCTIVE CONTACTS ON DIAPHRAGM SUPPORT

Gideon A. DuRocher, and Daniel J. DuRocher, both of Mt. Clemens, Mich., assignors to Essex International, Inc., Fort Wayne, Ind.

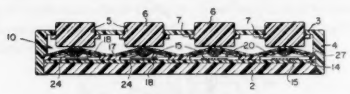
Filed Oct. 31, 1973, Ser. No. 411,345

Int. Cl. H01h *13/70, 1/02*

U.S. Cl. 200—5 A **20 Claims**

1. A switch plate adapted for use in an electrical switch for making and breaking an electrical circuit between a pair of

conductors, said switch plate comprising a body having a substantially planar portion surrounding a carrier portion extending outwardly of and to one side of the plane of said body portion; and a switching member carried by said carrier portion and normally occupying a position spaced from said plane, said carrier portion being formed of a stiff material that is sufficiently resilient to enable said switching member to be



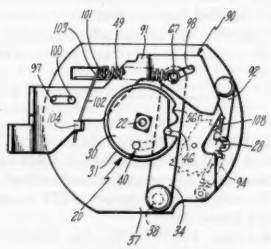
moved from its normal position toward said plane, the distance between said plane and said switching member when the latter is in its normal position being such that said carrier portion buckles as said switching member approaches said plane and produces a tactile sensation, and the resilience of the material of said carrier portion constantly tending to restore said switching member to its normal position.

3,879,587

BLENDER APPARATUS HAVING MANUAL PRESET TIMER ACTUATING DEVICE

James A. Draghi, Canton, Conn., assignor to M. H. Rhodes, Inc., Avon, Conn.

Filed June 13, 1973, Ser. No. 369,450
Int. Cl. H01h *43/14*
U.S. Cl. 200—35 R **10 Claims**



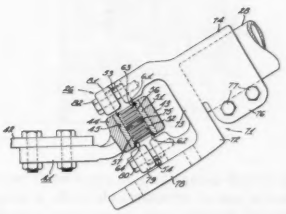
1. In a timer actuating device for being activated by and for actuating another associated device, comprising a shiftable controller mounted to be shifted between first and second positions thereof, drive spring means biasing the controller to its first position, a timer mechanism connected to the shiftable controller and settable to preset an established time interval and thereupon shift the controller from its first position to its second position against the bias of the drive spring means, the timer mechanism being selectively activatable to initiate the preset time interval and having timer mechanism controlled means for shifting the controller from its second position to its first position with the drive spring means at the end of the established time interval, the improvement whereupon the timer actuating device further comprises a shiftable actuator mounted to be shifted in one direction thereof from a first position to a second position thereof by the associated device and to be shifted in the opposite direction to its first position to thereupon actuate the associated device, and interconnecting means for interconnecting the controller, actuator and timer mechanism, the interconnecting means comprising first connection means connecting the shiftable actuator and timer mechanism operative for activating the timer mechanism when the shiftable actuator is shifted from its first position to its second position and second connection means connecting the actuator and controller operable for shifting the actuator from its second position to its first position with the drive spring means for actuating the associated device when the controller is shifted with the drive spring means from its second position to its first position, the second connection means permitting independent shifting of the shiftable actuator between its first and second positions with the controller in its second position to permit the timer mechanism to be initially preset and then subsequently activated by shifting the actuator from its first to its second position with the associated device, and the second connection means permitting the controller to be shifted from its first position against the bias of the drive spring means by the actuator as the actuator is shifted from its first position to its second position with the associated device.

3,879,588

CENTER BREAK DISCONNECT SWITCH

David R. Cole, Tigard, Oreg., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 7, 1973, Ser. No. 422,892
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 CB **6 Claims**



1. In a current transfer hinge arrangement for a disconnect switch having at least one movable contact arm;

an aluminum terminal pad having a boss provided with a bore;

a copper sleeve having a threaded bore disposed in the bore of the boss of said terminal pad and in intimate current transfer engagement;

a pair of copper studs threadedly engaged in the threaded bore of said sleeve, each of said studs having a portion extending outwardly of said threaded bore in opposite directions;

an aluminum hinge operatively connected to said movable contact arm for supporting the contact for movement to open and closed positions; and,

a pair of spaced apart clamp members integrally formed on said hinge, said clamp members being secured to the extending ends of an associated arc of said studs;

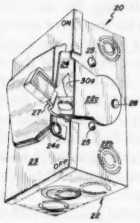
wherein said hinge and the contact arm are movable relative to said terminal pad and a current transfer joint is established therebetween by said sleeve and said studs.

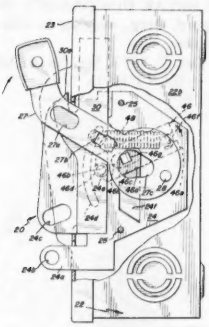
3,879,589

SAFETY SWITCH HAVING IMPROVED OPERATING MECHANISM AND INTERLOCK MEANS

Tadeusz J. Rys, Monroe, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Mar. 2, 1973, Ser. No. 337,328
Int. Cl.[2] H01H 9/22
U.S. Cl. 200—50 A 6 Claims





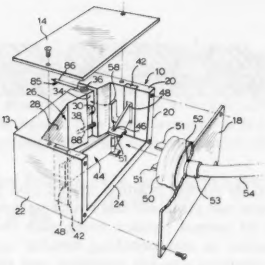
1. A safety switch comprising an open-front box including a rear wall and a pair of opposite side walls, a plate member secured to one of the side walls on an inner side thereof, an operating handle including a rear end portion disposed between the plate member and the one side wall. Means mounting the operating handle at the rear end portion thereof for pivotal movement with respect to the plate member and the one side wall to ON and OFF positions, a cover, means mounting the cover at a front edge portion of the other of the side walls for pivotal movement with respect to the box to open and closed positions, a base member of insulating material secured to the rear wall of the box, a blade actuator, means mounting the blade actuator for pivotal movement with respect to the base member, a switch blade, means mounting the switch blade for pivotal movement with respect to the base member to ON and OFF positions, means operatively connecting the switch blade to the blade actuator, a stationary contact member mounted in the box and engaged by the switch blade in the ON position thereof, a generally U-shaped driving member including a bight portion, a first leg portion, and a second leg portion, means mounting the first leg portion adjacent a free end for pivotal movement with respect to the plate member, means mounting the second leg portion adjacent a free end for pivotal movement with respect to the base member, means operatively connecting the second leg portion to the blade actuator, and a tension spring secured adjacent one end to the bight portion of the driving member and adjacent the other end to the operating handle.

3,879,590

PNEUMATICALLY ACTUATED ELECTRICAL SWITCH

Otto Attila Kovacs, 6 Crown Hill Pl., No. 301, Toronto, Ontario, Canada

Filed Apr. 2, 1973, Ser. No. 347,051
Claims priority, application Canada, Apr. 26, 1972, 140590
Int. Cl. H01h 35/40,
U.S. Cl. 200—83 P 11 Claims



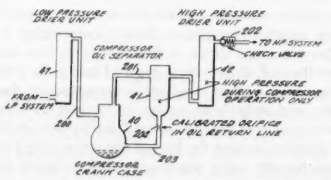
1. A remotely controllable electric switch, comprising:
a housing;
at least two spaced electrical contacts;
a toggle anchored pivotably at each of its ends in resilient mounting means positioned on two first opposed walls of the housing, the toggle being movable across a line through said ends into a position of rest on either side of said line, said toggle comprising a pair of rigid strips interconnected by pivot means, each strip terminating at its free end in a rib lying in the plane of the strip and embedded at least partially in the resilient mounting means;
fluid actuable means selectively expandable and collapsable, said fluid actuable means being connected with the toggle for movement of the toggle into either of said positions of rest;
the contacts and the fluid actuable means being mounted in the housing on two second opposed walls of the housing normal to said first opposed walls;
the toggle carrying an electrically conductive member bridging the contacts in one of said positions of rest of the toggle.

3,879,591

GAS CIRCUIT BREAKER PRESSURE CONNECTION FOR HIGH AND LOW PRESSURE DRIERS

Christian Tschannen, Unterentselden, Switzerland, and Henry G. Meier, Glendale, Calif., assignors to ITE Imperial Corporation, Spring House, Pa.

Filed Sept. 19, 1973, Ser. No. 398,872
Int. Cl. H01h 33/57
U.S. Cl. 200—148 E 8 Claims



1. A gas pressure control system for a two pressure circuit breaker; said two pressure circuit breaker having a relatively high gas pressure region filled with a given dielectric gas and a relatively low gas pressure region filled with a given dielec-

tric gas; said gas pressure control system including a compressor, and a high pressure drier unit and an oil separator; said compressor having a low pressure connection and a high pressure connection; said low pressure connection being connected to said low gas pressure region; said high pressure connection being connected through said oil separator to an inlet port of said high pressure drier; said high pressure drier having an outlet port connected to said high gas pressure region; and an oil return line connected from said oil separator to a low pressure region of said compressor; said oil return line having a fixed restriction therein of sufficient size to permit oil flow therethrough and to permit a substantial pressure differential thereacross when said compressor operates.

3,879,592

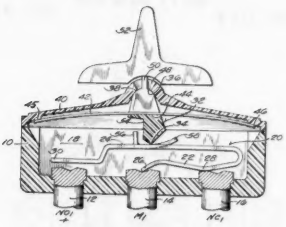
SWITCH HAVING PIVOTED U-SHAPED RESILIENT CONDUCTIVE BLADE

John Comerford, Chicago, and Richard L. Lauritsen, Hoffman Estates, both of Ill., assignors to Controls Company of America, Schiller Park, Ill.

Filed Feb. 11, 1974, Ser. No. 441,439

Int. Cl. H01h *23/24*

U.S. Cl. 200—153 G **8 Claims**



8. A switch comprising,

a housing,

spaced terminals in the housing,

an electrically conductive resilient blade bent into a generally U shape with the free end of one leg pivoted on one terminal,

an actuator pivotally mounted in the housing and normally engaging the other leg at a point offset from the imaginary line connecting the center of the actuator pivot and the pivot of said blade,

movement of said actuator to move the point of engagement with the blade through said imaginary line being operative to move the blade relative to said other terminal.

3,879,593

MEMBRANE SWITCH

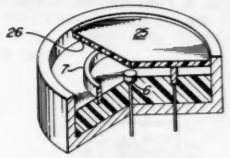
Willis A. Larson, Wayzata, Minn., assignor to Magic Dot, Inc., Minneapolis, Minn.

Division of Ser. No. 161,948, July 9, 1971, Pat. No. 3,737,670, which is a continuation of Ser. No. 865,760, Oct. 13, 1969, Pat. No. 3,737,670. This application Mar. 29, 1973, Ser. No. 346,055

Int. Cl. H01h *13/54*

U.S. Cl. 200—159 B **19 Claims**

1. Electrical membrane switch apparatus comprising: a housing; first electrode means having a top surface and substantially centrally disposed in the housing; second annular electrode means having a top surface and disposed in the housing and encompassing the first electrode means, with the level of the top surface of the first electrode means vertically spaced from the level of the top surface of the second electrode means; and elastic membrane means provided with a conductive coating on one of its surfaces, the elastic membrane means being normally supported by the housing closely spaced from, but not touching, the first and second electrode means, the elastic membrane means being adapted to deflect



under pressure such that the conductive coating touches both the first and second electrode means to provide a conductive path therebetween.

3,879,594

TEMPERATURE MEASUREMENT AND CONTROL OF ROTATING SURFACES

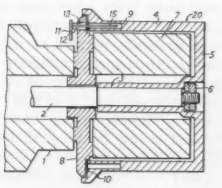
Terence Graham Shillito, P.O. Box 16 Paston Rd., Manchester, M22 4TX, Lancashire, England

Filed Sept. 26, 1973, Ser. No. 400,917

Claims priority, application United Kingdom, Sept. 29, 1972, 44944/72

Int. Cl. H05b *5/06, 3/02*

U.S. Cl. 219—10.49 **7 Claims**



1. An apparatus for transferring heat to a rapidly moving filament comprising:

a conveying element having an endless conveying surface;

means for mounting said element on a frame of a filament processing machine;

a heating source mounted on said frame for supplying heat to a surface of said conveying element which, while in use, contacts said filament;

a recess formed in a side edge of said conveying element, adjacent to said frame, said recess extending adjacent and parallel to the surface of said conveying element;

a radiant energy pick-up surface disposed within said recess, said surface having substantial area and being exposed to radiation from the side walls of said recess;

a temperature sensor mounted in good thermal contact with said pick-up surface and extending into said recess without contacting the sidewalls thereof;

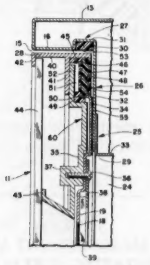
intermediate support in good thermal contact with the ambient atmosphere for support of said pick-up surface, said support having a high thermal conductivity and there being a high thermal resistance between said intermediate support and said pick-up surface; and

support means of high resistance for mounting said intermediate support on the frame of the machine.

3,879,595
MICROWAVE OVEN DOOR SEAL

John T. Lamb, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Jan. 8, 1973, Ser. No. 321,512
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 D 16 Claims



1. An electronic device in which electromagnetic radiation is used, comprising an oven body, a cooking cavity in said oven body, an access opening to said cooking cavity, a door coupled to said oven body and movable between an open position for access to said cooking cavity through said access opening and a closed position closing said access opening, said door having at least three edges recessed within an overlapping portion of said oven body when said door is in such closed position, said door having an inwardly facing substantially planar portion generally parallel to the plane of said access opening, and electromagnetic radiation seal means for preventing radiation leakage from said cooking cavity through said access opening when said door is in said closed position, said electromagnetic radiation seal means comprising a capacitive seal adjacent said access opening, said capacitive seal including said substantially planar portion of said door and an opposed portion of said oven body, said portions being electrically conductive, and electrically non-conductive material positioned therebetween and adhered to at least one of said portions, a first electromagnetic radiation absorbent seal including electromagnetic radiation absorbent material in a hollow part forming an indentation in at least one of said door and oven body following said capacitive seal, and a second electromagnetic radiation absorbent seal including electromagnetic radiation absorbent material in a hollow part forming an indentation in at least one of said oven body overlapping portion and door edges following said first electromagnetic radiation absorbent seal.

3,879,596
METHOD FOR ELECTRICAL DISCHARGE MACHINING EMPLOYING PERIODIC EXTENDED PULSE OFF TIME

Dalton R. Verner, Orchard Lake, Mich., assignor to Colt Industries Operating Corporation, New York, N.Y.

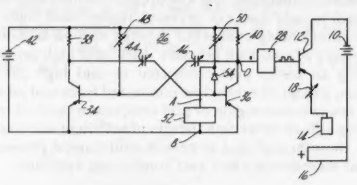
Division of Ser. No. 228,661, Feb. 23, 1972, Pat. No. 3,789,182. This application July 19, 1973, Ser. No. 380,757
Int. Cl. B23p 1/08
U.S. Cl. 219—69 M 4 Claims

1. The method of electrical discharge machining of an electrically conductive workpiece by providing machining power pulses in groups thereto across a dielectric filled gap comprising the steps of:

a. providing a series of machining power pulses across the machining gap at predetermined on and off times;

b. predetermining the number of pulses in machining pulse groups; and

c. periodically extending the off time between such groups of said pulses to provide a predetermined off time which

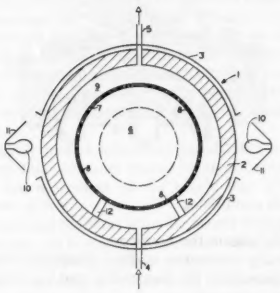


is substantially greater than the normal predetermined off times.

3,879,597
PLASMA ETCHING DEVICE AND PROCESS

Richard L. Bersin, Kensington, and Michael J. Singleton, Hayward, both of Calif., assignors to International Plasma Corporation, Hayward, Calif.

Filed Aug. 16, 1974, Ser. No. 498,100
Int. Cl. B23k 9/00
U.S. Cl. 219—121 P 6 Claims



1. A plasma etching device comprising a nonmetallic, inorganic cylinder having an end wall and an opposing front opening, a plurality of electrodes surrounding said inorganic cylinder and connected to a source of radio frequency energy, a perforated cylinder of electrically conductive metal within, concentric to, and spaced from the wall of said inorganic cylinder, said perforated metal cylinder being large enough in diameter to contain within it the material to be etched.

3,879,598
SOFA BED CONSTRUCTION

Michael E. Darling, 2735 Ladoga Ave., Long Beach, Calif. 90815

Filed Feb. 11, 1974, Ser. No. 440,978
Int. Cl. H05b 1/00
U.S. Cl. 219—217 9 Claims

1. A sofa bed construction comprising:

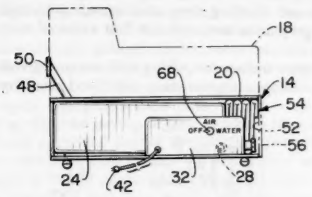
a sofa frame;

a liquid tank included within said sofa frame, said tank adapted to retain a quantity of liquid;

a liquid fillable mattress connected to said sofa frame having a valve for supplying liquid into said mattress, said mattress being spaced from said tank, a conduit interconnecting said tank and said mattress, said conduit to conduct liquid between said tank and said mattress; and

pump means connectable between said tank and said mat-

tress, said pump means to remove the liquid from said tank and supply such into said mattress through said



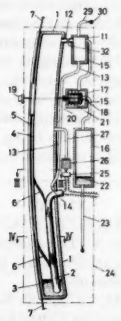
conduit, said pump means also to effect return of said liquid from said mattress into said tank.

3,879,599

HEAT-TREATMENT APPARATUS FOR SYNTHETIC FIBER YARNS

Nobuhisa Kodaira, 1-1-10 Shoan, Suginami-ku, Tokyo, Japan

Filed May 17, 1974, Ser. No. 470,915
Int. Cl. H05b *1/02*
U.S. Cl. 219—326 **12 Claims**



1. A heat-treatment apparatus for synthetic fiber yarns including a vertically elongated sealed vessel having its one side wall constructed of a heat-exchanging wall with a heating surface for said yarns formed on its outside and forming a thermal medium vapor chamber inside of said sealed vessel; comprising

A. an electric heater including an upright metallic tube closed at its lower end, an electric resistance element within said tube and electrically insulated therefrom; and a cover attached to the outer surface of said tube and covering substantially the whole surface thereof, said cover being a heat-resistive and mesh-type porous material having a porosity such that capillarity may occur therein for a given liquid thermal medium, the lower end portion of the heater being submerged in said liquid thermal medium enclosed at the bottom of said vertically elongated sealed vessel with most of the remainder thereof exposed in said thermal medium vapor chamber,

B. a return liquid thermal medium guide plate attached to and disposed between the inner surface of said heat-exchanging wall and the portion of said electric heater exposed in the thermal medium vapor chamber.

C. a separator tank communicated with the upper portion of said vertically elongated sealed vessel, and

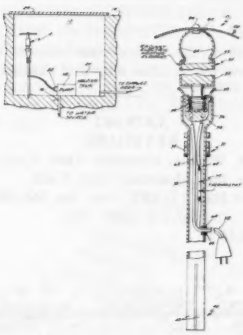
D. a return pipe having its upper end communicated with said separator tank, and having its lower end disposed within said sealed vessel at a position just above said electric heater.

3,879,600

HEATING APPARATUS FOR WELL PITTS AND THE LIKE

Carle P. Beck, Newaygo, Mich., assignor to Marian M. Beck, Newaygo, Mich., a part interest

Filed Feb. 12, 1973, Ser. No. 331,782
Int. Cl. H05b *1/02*; **E03b** *7/10*
U.S. Cl. 219—342 **8 Claims**



1. Heating apparatus for the heating of the atmosphere surrounding said apparatus, especially the atmosphere in areas subjected to moisture such as well pits and the like, comprising in combination an elongated upright support means; base means for supporting said support means in an upright position above a supporting surface; electrical heater means mounted at the top of said upright support means a distance above the supporting surface for heating the atmosphere surrounding said apparatus; ambient temperature responsive means mounted on the upright support means for regulating the amount of heat produced by said electrical heater means in response to the temperature of the surrounding atmosphere; and protective means for preventing liquid from falling on said heater means and from directly contacting said temperature responsive means including hood means mounted on top of and covering said heater means for deflecting liquid away from said heater means and said temperature responsive means; said protective means including means for encasing said temperature responsive means within said support means.

3,879,601

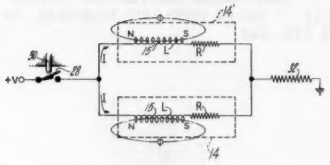
ELECTROMAGNETICALLY POWERED DRIVE FOR A HIGH SPEED COUNTER

John G. Gamble, Simsbury, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Jan. 29, 1973, Ser. No. 327,716
Int. Cl. G06m *1/10*
U.S. Cl. 235—92 C **6 Claims**

1. An electromagnetically powered drive comprising a source of pulses, a plurality of solenoids having magnetic circuits which are independent of each other and a common armature means attracted by said solenoids simultaneously, said solenoids being connected in series with said source of

pulses and in parallel electrical circuit relationship with each other, and a resistor to decrease the time constant of the



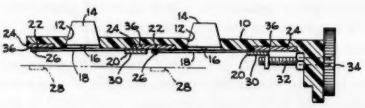
solenoids and limit the steady state current therethrough electrically connected in series with said paralleled solenoids.

3,879,602

KEYBOARD

Alexander D. R. Walker, Mountain View, Calif., assignor to N-Dimensions, Inc., Mountain View, Calif.

Filed June 11, 1973, Ser. No. 368,980
Int. Cl. G06c *7/02*
U.S. Cl. 235—145 R **4 Claims**



1. In a keyboard, the combination comprising:

a. a plate member,

b. a plurality of apertures in said plate member,

c. a plurality of elongated spring members,

d. one of said spring members lying under each of said apertures,

e. a first end of each of said spring members being fastened to said plate,

f. the second end of each of said spring members and said plate having mutually attracting magnetic means thereon whereby said second end is attracted to and held against said plate,

g. the resilience of said spring member biasing said second end toward said plate,

h. first contact means on said second end of each of said spring members,

i. second contact means located in operative relationship with said first contact means,

j. key means in each of said apertures, said key means being adapted to put pressure on said spring means between the ends thereof whereby initial pressure on said key means will flex said spring member and additional pressure will break away said magnetic means and cause said contacts to change their operative relationship.

3,879,603

ANALOG HEAT EXCHANGE COMPUTING SYSTEM

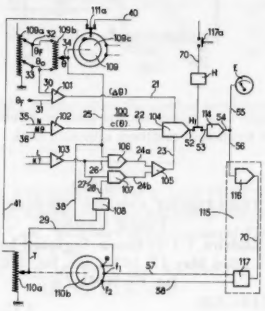
Guy Sartorius, Bau Saint-Martin, France, assignor to Societe des Aciers Fins de l'Est, Boulogne-Billancourt, France

Filed Feb. 21, 1973, Ser. No. 334,502
Claims priority, application France, Mar. 9, 1972, 72.08269
Int. Cl. G06g *7/56*
U.S. Cl. 235—151.1 **12 Claims**

1. In an analogue heat exchange automatic computing system for adjusting the temperature of the heated gases in a metallurgical direct flame treatment furnace having at least one treating zone and means in the zone to detect heat exchange parameters including a first value of the temperature of the gases, a fixed dwelling time of a charge determined by its travel through said furnace, comprising:

analogue means for computing a voltage value representing a second dwelling time corresponding to said heat exchange parameters and said first value of said temperature;

comparator means comparing said computed voltage value with voltages representing said fixed dwelling time for



providing an output signal when the difference therebetween exceeds a predetermined amount;

a step-by-step control element connected responsively to said output signal for changing said first value of said temperature to a second value thereof; and

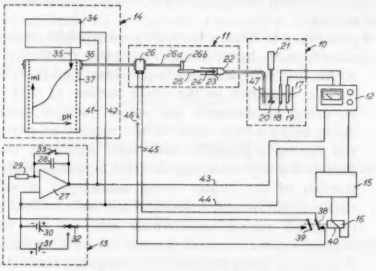
means actuated by said step-by-step element for introducing said second value of said temperature into said analogue means; said analogue means being means to determine a voltage representing a modified second dwelling time.

3,879,604

APPARATUS FOR RECORDING THE PROGRESS OF A TITRATION

Henrik Malmvig, Hellerup, Denmark, assignor to Radiometer A/S, Copenhagen, Denmark

Filed July 11, 1973, Ser. No. 378,261
Claims priority, application United Kingdom, July 11, 1972, 32366/72
Int. Cl. G01n *31/16*; **G06g** *7/18*
U.S. Cl. 235—151.3 **20 Claims**



1. An apparatus for registering the progress of a titration, said apparatus comprising in combination

a. means for measuring a parameter of a test liquid and providing an electrical voltage signal having a predetermined relationship to said parameter,

b. supply means for supplying a titrating agent into the test liquid so as to obtain variation of said parameter,

c. a recording device of the type having a recording medium, a recording member for making records thereon,

and first and second driving means for mutually displacing said record medium and said record member along respective co-ordinate axes, said first driving means including means for controlling said supply means so as to supply an amount of titrating agent as a predetermined function of said mutual displacement provided by said first driving means along a first of said co-ordinate axes,

d. an electrical circuit for providing a compensating voltage signal changing substantially proportional with respect to the total period of time in which the said circuit has been energized during the titration procedure, said second driving means including a servomotor electrically connected to and controlled by said electrical circuit in such a manner that said mutual displacement along a second of said co-ordinate axes takes place as a predetermined function of the total time in which said electrical circuit has been energized, and

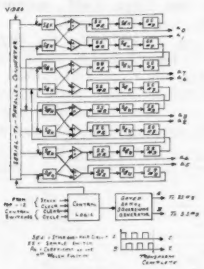
e. a controller device for receiving said measuring and compensating signals and adapted to energize and deenergize at least one of said driving means so as to maintain the sum of said measuring and compensating voltage signals substantially constant.

3,879,605

SPECIAL PURPOSE HYBRID COMPUTER TO IMPLEMENT KRONECKER-MATRIX TRANSFORMATIONS

Joseph W. Carl, Teaneck, N.J., and Richard V. Swartwood, Fruitland, Idaho, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 4, 1973, Ser. No. 366,915
Int. Cl. G06f *15/34*
U.S. Cl. 235—156 **4 Claims**



1. A special purpose computer for the computation of a class of linear Walsh transformations, such class being characterized by a Kronecker-product rule for the construction of the bases of the transformation, and such class being typified by the Walsh transform, comprising:

a. means for accepting input data,

b. means for computing having a core matrix, said computing means computing the product of said core matrix and the input data, said computing means being arranged to compute the algorithm ALG(1), said computing means operably connected to said accepting means, said core matrix resulting from the factorization of the Walsh matrix according to the Kronecker-product rule, said Kronecker-product rule and said factorization being defined by the flow diagram for said algorithm ALG(1),

c. a control logic unit to control the recursive transfer of the output of said means for computing the product of the core matrix and the input data to the input of said computing means, said control logic unit operably connected to said computing means, said recursive transfer to take place the appropriate number of times, said appropriate number being a predetermined number, said predetermined number being defined by the flow diagram appertaining for the algorithm ALG(1), and said recursive transfer to result in the iterative computation of the desired transformation, and

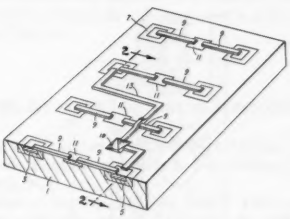
d. readout means for transferring the output of said computing means to external equipment, said readout means operably connected to said computing means.

3,879,606

LIGHT PROJECTION COUPLING OF SEMICONDUCTOR TYPE DEVICES THROUGH THE USE OF THERMALLY GROWN OR DEPOSITED SiO_2 FILMS

Kenneth E. Bean, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 24, 1973, Ser. No. 400,073
Int. Cl. G02b *5/14*; **H01l** *15/00*
U.S. Cl. 250—227 **7 Claims**



1. A semiconductor chip interconnect system, which comprises in combination:

a. a semiconductor chip,

b. a pair of light responsive semiconductor devices formed in said chip,

c. a layer of light conducting material overlying at least a portion of one surface of said chip and having termination points at said semiconductor devices for transmitting light thereto,

d. a mirror mounted on said chip communicating with said layer of light conducting material, and

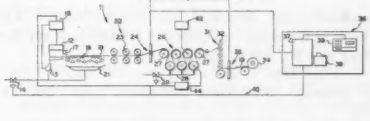
e. means to direct light onto said mirror.

3,879,607

METHOD OF MEASURING THE AMOUNT OF SUBSTANCE ASSOCIATED WITH A BASE MATERIAL

Carolyn Bjorklund, Palo Alto, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 345,656, March 28, 1973, abandoned. This application July 8, 1974, Ser. No. 485,896
Int. Cl. G01t *1/16*
U.S. Cl. 250—252 **7 Claims**



1. A method for measuring the amount of moisture associated with a moving base material where said moisture is a significant proportion of the total weight of said base material such moisture having both radiation absorption and scattering characteristics comprising the following steps: directing infrared radiation of a single selected band at said material which

is substantially insensitive to said absorption characteristic and relatively sensitive to said scattering characteristic; measuring the amount of said radiation received from said material, said received radiation being proportional to said amount of moisture; and standardizing said measured amount of radiation to accommodate long term changes in conditions by making an independent on-line measurement at a location on said base material substantially different than the location where radiation is directed at said material.

3,879,608

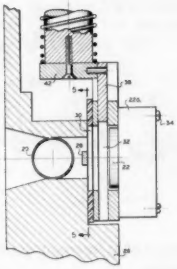
WORKPIECE SHAPE - INSENSITIVE RADIATION GAUGING OF ROD-LIKE MATERIALS

James Michael McMullen, Charlotte, Vt., and Elmer Wilbert Sturkol, Columbus, Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed June 25, 1970, Ser. No. 49,893

Int. Cl. G01t *1/16*

U.S. Cl. 250—359 **8 Claims**



1. In a gauging head including a detector responsive to radiation for measuring a property of an elongated, traveling workpiece in the form of a rod, said gauging head having means for guiding said workpiece for longitudinal movement along a path of travel, and a source for providing a beam of radiation intersecting said path, the improvement for reducing the effect on the measurements of changes in the cross-sectional shape of the mass distribution in said workpiece, which comprises blanking means positioned adjacent to said path on the side thereof toward said source for overshadowing a central portion of said path which would otherwise be freely irradiated by a central portion of said beam while effectively allowing edge portions of said path to be freely irradiated by edge portions of said beam.

3,879,609

DEVICE FOR THE DETERMINATION OF CONCENTRATIONS OF FISSILE AND/OR FERTILE MATERIALS BY MEANS OF X-RAY FLUORESCENCE SPECTROMETRY

Adolf VonBaeckmann, Bruchsal, and Jurgen Neuber, Karlsruhe, both of Germany, assignors to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany

Filed Sept. 1, 1972, Ser. No. 285,663

Claims priority, application Germany, Sept. 20, 1971, 2146774

Int. Cl. G01n *23/00*

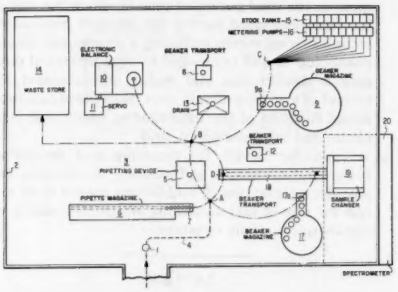
U.S. Cl. 250—278 **5 Claims**

1. In a device for the determination of concentrations of fissile and/or fertile materials selected from the group consisting of thorium, uranium, neptunium, plutonium, americium, and curium in aqueous or organic solutions, the combination which comprises:

a. closed means for receiving a sample to be analyzed;

b. X-ray fluorescence spectrometry means for receiving emissions from the sample;

c. electromechanically operated means located within said receiving means for preparing the sample, including means for transporting the sample, means for diluting the sample with known reagents or diluents, means for weighing the sample both before and after being diluted, means for moving the sample into a position to be X-rayed and means for disposing of the diluted sample after it has been analyzed; and



d. automatic control means connected to said X-ray means and said sample preparing means for controlling the operation of each of said respective means.

3,879,610

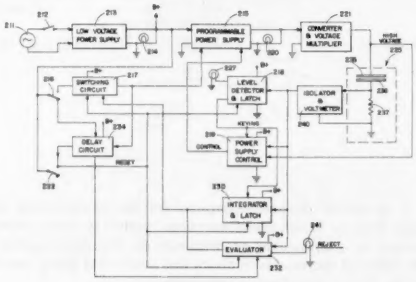
IONOGRAPHIC EXPOSURE METHOD, APPARATUS

Joseph R. Baker, San Diego, Calif., assignor to Diagnostic Instruments, Inc., San Diego, Calif.

Filed Aug. 27, 1973, Ser. No. 392,095

Int. Cl. B41m *5/00*

U.S. Cl. 250—315 A **23 Claims**



1. In a method for arranging for, and conducting, an ionographic imaging sequence for imaging a subject by directing a prescribed radiation flux upon the subject for a prescribed irradiation period and generating an electrostatic image of the differential flux transmission therethrough, across a prescribed ionographic arrangement including electrodes defining an imaging gap, the improvement therewith comprising:

providing detection means adapted to detect and monitor current across this gap;

with this detection means, monitoring the level of gap current before, and during, said irradiation period to derive values reflecting such;

comparing these values to a prescribed standard and determining any variance therefrom;
and providing for imaging controls for adjusting and limiting the imaging sequence according to variances so found.

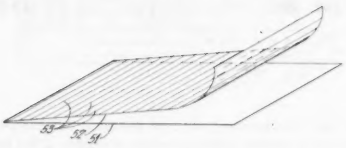
3,879,611
LUMINESCENT BACKING SHEET FOR WRITING IN THE DARK

Becky J. Schroeder, 2317 Valleybrook Dr., Toledo, Ohio 43615

Continuation-in-part of Ser. No. 428,339, Dec. 26, 1973, Pat. No. 3,832,556, which is a continuation of Ser. No. 288,148, Sept. 11, 1972, abandoned. This application Aug. 19, 1974, Ser. No. 498,705

Int. Cl. H01j *1/62*

U.S. Cl. 250—462 **8 Claims**



1. A luminescent backing sheet assembly for guiding the application of matter on writing sheets in darkness comprising;
a backing sheet having a luminescent surface,
an overlay sheet of material through which luminescent light can pass overlying said backing sheet,
said overlay sheet having areas of light contrasting material which in combination with the luminescent surface of said backing sheet provide a visible contrast in the dark defining a guide for application of intelligible material to sheets placed over the backing sheet assembly.

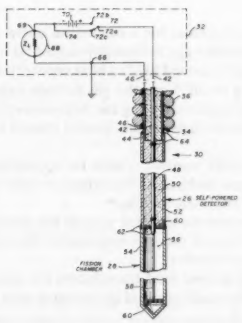
3,879,612
MULTI-SENSOR RADIATION DETECTOR SYSTEM

Robert Gilmer Foster, Granby, Conn., and Richard David Cyboron, Feeding Hills, Mass., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 24, 1973, Ser. No. 391,441

Int. Cl. G01t *3/00*

U.S. Cl. 250—370 **8 Claims**



1. A multi-sensor radiation detector system comprising:
a. a first sensor of the ion chamber type including a pair of spaced electrodes for connection to a source of voltage, and electrical current being established between said electrodes when said voltage is applied thereacross and neutron flux is incident on said sensor, said current being indicative of the intensity of said incident neutron flux;
b. a second sensor of the self-powered type including a pair of spaced electrodes and insulating means extending therebetween, an electrical current being established between said electrodes when neutron flux is incident on said second sensor, said current being indicative of the intensity of said incident neutron flux;
c. conductor means directly connecting said first and second sensors electrically in parallel;
d. a load impedance;
e. voltage source means; and
f. means for selectively connecting said conductor means including said first and second sensors alternately to said load impedance or to said load impedance and additionally said voltage source means, whereby current through said load impedance is indicative of the intensity of neutron flux incident with said second sensor when said first and second sensors are connected to said load impedance absent said voltage source and is indicative of the intensity of neutron flux incident with both said first and second sensors when said voltage source is additionally connected thereto.

3,879,613
METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES

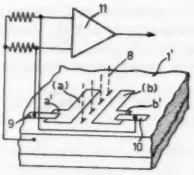
Julian Portway Scott, and Julian Robert Anthony Beale, both of Salfords, England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 312,848, Dec. 7, 1972, abandoned. This application May 9, 1974, Ser. No. 468,248

Claims priority, application United Kingdom, Dec. 13, 1971, 57769/71

Int. Cl. H01j *37/26*

U.S. Cl. 250—492 **18 Claims**



1. A method of aligning a semiconductor body with respect to an electron beam pattern, comprising for each direction with respect to which alignment is desired, the steps of:
forming on the semiconductor body a reference marker having two outer regions of one conductivity type semiconductor material separated by an intermediate region of opposite conductivity type semiconductor material;
forming an alignment electron beam positionally fixed relative to the electron beam pattern and suitably cross-sectioned such that when the electron beam pattern is aligned with respect to the semiconductor body, said alignment electron beam strikes said intermediate region midway between said two outer regions causing thereby equal currents diffusing thereto from each of said two outer regions;
comparing the currents diffusing into said intermediate region from each of said two outer regions;
adjusting the relative position of the electron beam pattern with respect to the semiconductor body until said compared currents are equal.

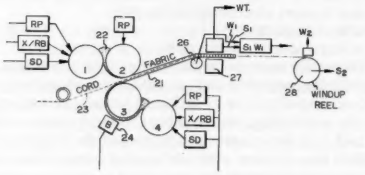
3,879,614
METHOD OF MEASURING THE WINDUP WEIGHT OF A MOVING STRETCHABLE MATERIAL

Orin K. Martin, San Jose, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Continuation of Ser. No. 378,431, July 12, 1973, abandoned. This application May 30, 1974, Ser. No. 474,722

Int. Cl. G01j *1/20;* **G01n** *21/18, 21/30*

U.S. Cl. 250—548 **4 Claims**



1. A method of measuring the windup weight per unit area of a moving stretchable material being manufactured by a machine, said material being held under tension between rolls and windup reel, comprising the following steps: sensing the weight per unit area of said moving material at a scanning location displaced from said windup reel; sensing the width and speed of said material at said location; sensing the width and speed of said material at said windup reel; and determining windup weight by

$$WT_{windup} = \frac{WIDTH_{scanner}\ SPEED_{scanner}}{WIDTH_{windup}\ SPEED_{windup}} \times WT_{scanner}$$

3,879,615
METHOD AND APPARATUS FOR THE RAPID MEASURING OF THE ANGULAR DEPENDENCE OF SCATTERED LIGHT

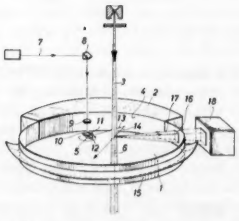
Herbert Moser, Leopoldshafen, Germany, assignor to Gesellschaft für Kernforschung m.b.H., Karlsruhe, Germany

Filed Nov. 8, 1973, Ser. No. 414,126

Claims priority, application Germany, Nov. 9, 1972, 2254764

Int. Cl. G03b *27/06*

U.S. Cl. 250—574 **14 Claims**



1. An apparatus for the rapid measuring of the angular dependence of light scattered from a scattering volume containing particles, particularly those forming a cluster jet, which has a main axis, comprising in combination:

a. means for generating a laser beam;

b. means for rotating said laser beam in a plane about the scattering volume so that the rotating laser beam is directed into the scattering volume for traversing the same and for generating light scattered by the particles in the scattering volume;

c. means defining a stationary slit being spaced from said main axis for transmitting a scattered light beam of the scattered light; and

d. a scattered light detector being stationary with respect to said main axis and in alignment with said slit for receiving therefrom said scattered light beam.

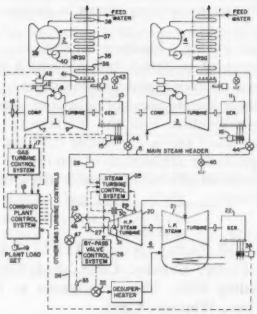
3,879,616
COMBINED STEAM TURBINE AND GAS TURBINE POWER PLANT CONTROL SYSTEM

Jack M. Baker, Greenville, S.C.; Vladimir T. Dimitroff; Lawrence R. Mizen, both of Peabody, Mass., and Russell A. Gray, Marblehead, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 17, 1973, Ser. No. 398,218

Int. Cl. F01k *23/00*

U.S. Cl. 290—40 **13 Claims**



1. A control system for a combined cycle power plant including at least one gas turbine driving a first load and a steam turbine driving a second load; a heat recovery steam generator for generating steam from the gas turbine exhaust heat and a steam header interconnecting the heat recovery steam generator and the steam turbine; the control system further comprising:

a. a gas turbine control system for regulating a fuel supply to the gas turbine in accordance with a load demand setpoint supplied thereto;

b. a steam turbine control system for positioning a steam turbine control valve in response to the steam pressure in said steam header;

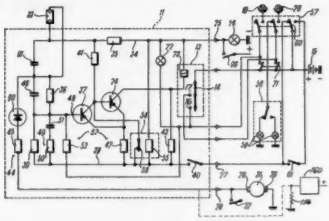
c. first and second load transducers for measuring, respectively, the loads on said gas turbine and said steam turbine; and,

d. a combined power plant control system for comparing a load demand setpoint for the combined plant with the sum of the signals from the first and second load transducers to provide a combined plant load error, and to adjust the load setpoint of said gas turbine control system in accordance with the combined plant load error.

3,879,617
LIGHTING SYSTEMS FOR VEHICLES

Hermann Faller, Guetenbach, Black Forest, Germany, assignor to Gebr. Faller AG, Augst near Basel, Switzerland

Filed Sept. 6, 1973, Ser. No. 394,847
Claims priority, application Germany, Sept. 16, 1972, 2245568
Int. Cl. H05b *39/00*
U.S. Cl. 307—10 LS **36 Claims**



1. Apparatus powered by a d.c. network for the switching on and off a vehicle exterior lighting system as a function of environmental illumination, comprising light sensing means for sensing said illumination and an automatic control device, said control device including:

threshold value means for switching states in response to said light sensing means, said threshold value means having a switching hysteresis such that it effects a switching off at a greater illumination than that at which the switching-on occurs;

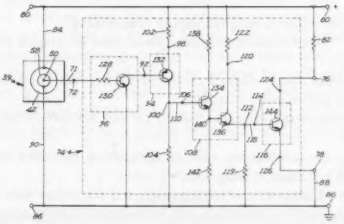
means for switching said exterior lighting system on and off in response to said threshold value means; and

switching delay means for delaying the switching off and the switching on at illumination values above and below the switching-on and switching-off illumination values, respectively, said switching delay means having a switching off delay greater than its switching on delay.

3,879,618
TOUCH SENSITIVE ELECTRONIC SWITCH

Willis A. Larson, Wayzata, Minn., assignor to Magic Dot, Inc., Minneapolis, Minn.

Continuation of Ser. No. 199,195, Nov. 16, 1971, abandoned.
This application Oct. 13, 1972, Ser. No. 297,410
Int. Cl. H01h *35/00*
U.S. Cl. 307—116 **66 Claims**

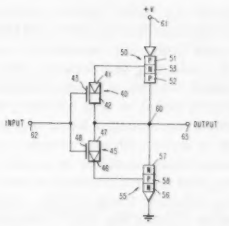


1. Electronic switch apparatus operable by the lateral bridging of switch electrodes by the skin resistance of an operator's finger, comprising in combination: a planar insulator having top and bottom surfaces and at least three edges; a digitated array of first electrodes arranged to be connected to the input of a D.C. amplifier, with the input electrodes laterally immovably attached to the top surface of the insulator and rising from the top surface of the insulator to expose a top surface of the input electrodes to the finger of an operator; first electrical means for providing an electrical connection between the input electrodes and an input to a D.C. amplifier; a digitated array of second electrodes arranged to be connected to the voltage supply of the D.C. amplifier, with the supply electrodes laterally immovably attached to the top surface of the insulator and rising from the top surface of the insulator to expose a top surface of the supply electrodes to the finger of an operator; the digitated array of supply electrodes being laterally spaced and insulated from the array of input electrodes and interdigitated with the array of input electrodes; second electrical means for providing an electrical connection between the supply electrodes and the voltage supply within the D.C. amplifier; an array of third electrodes arranged to be connected to a reference within the D.C. amplifier, with the reference electrodes laterally immovably attached to the top surface of the insulator, laterally spaced and insulated from both the input electrodes and supply electrodes, and positioned laterally between the input electrodes and supply electrodes for interrupting any leakage current attempting to flow between the input electrodes and supply electrodes and conduct such leakage current to the reference; third electrical means for providing an electrical connection between the reference electrodes and the reference within the D.C. amplifier.

3,879,619
MOSBIP SWITCHING CIRCUIT

Peter Pleshko, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 26, 1973, Ser. No. 373,843
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **3 Claims**



1. A high speed switching circuit comprising:

a first bipolar transistor having an emitter, a collector and a base,

a first metal oxide semiconductor field effect transistor of like conductivity type as said first bipolar transistor, said metal oxide semiconductor field effect transistor having a source electrode, a drain electrode and a gate electrode, said drain electrode being connected to the collector of said first bipolar transistor and said source electrode being connected to the base of said first bipolar transistor to provide collector to base feedback for said first bipolar transistor,

a second, opposite conductivity type bipolar transistor having an emitter, a collector and a base,

a second, opposite conductivity type metal oxide semiconductor field effect transistor having a source electrode, a drain electrode and a gate electrode, said drain electrode being connected to the collector of said second bipolar transistor and said source electrode being connected to the base of said second bipolar transistor to provide collector to base feedback for said second bipolar transistor, biasing means connected across said emitter and collector of said first bipolar transistor and across said collector and emitter of said second bipolar transistor in series to provide an operating voltage,

input means connected directly to the gate electrodes of said first and second metal oxide semiconductor field effect transistors, and

output means connected directly to the collectors of said first and second bipolar transistors.

3,879,620
DC POWER CONTROL SYSTEM

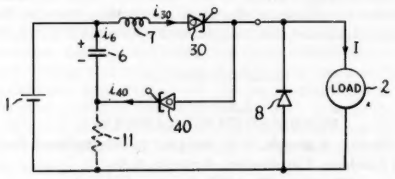
Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 127,104, March 23, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,678

Claims priority, application Japan, Mar. 24, 1970, 45-24613

Int. Cl. H03k *17/72*

U.S. Cl. 307—252 M **15 Claims**



1. A controllable d.c. power system including a reverse conduction main thyristor having a forward blocking capability in a current path from a d.c. source to a load such that it can be rendered conducting in a forward direction by a triggering signal applied thereto, a flywheel diode connected in series and oppositely poled to said reverse conduction main thyristor, a commutation inductive linear reactor connected in said current path in series with said reverse conduction main thyristor, a commutation capacitor in parallel with a series circuit comprising said reverse conduction main thyristor and said commutation inductive linear reactor, commutation control means, means connecting said commutation control means and commutation capacitor in a second series circuit configuration in parallel with the first-mentioned series circuit, whereby said commutation capacitor and said commutation inductive linear reactor oscillate to turn off said reverse conduction main thyristor under control of said commutation control means.

3,879,621
SENSE AMPLIFIER

Joseph Richard Cavaliere, Hopewell Junction, and William John Scarpero, Jr., Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

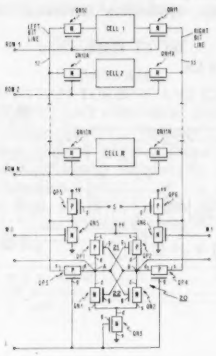
Filed Apr. 18, 1973, Ser. No. 352,143

Int. Cl. H03k *3/281*

U.S. Cl. 307—279 **16 Claims**

1. A sense amplifier comprising:

a first and second pair of cross coupled FET means, each FET means having a gating electrode and first and second gated electrodes, means interconnecting said pairs to form first and second common nodes providing an output from a selected one of said nodes; active first and second signal input means connected respectively to said first and second nodes; active pulse source means connected to a gated electrode of each FET means of one pair, and means electrically coupled to said signal input means and said pulse source means for biasing said signal input



means and said pulse source means to opposite states of conduction.

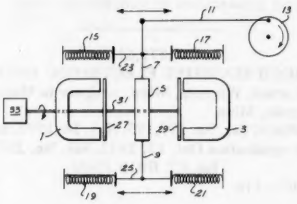
3,879,622
PERMANENT MAGNET MOTION CONVERSION DEVICE

John W. Ecklin, 5100 8th Rd., South, Apt. 508, Arlington, Va. 22204

Filed Mar. 29, 1974, Ser. No. 456,336

Int. Cl. H02k *7/06*

U.S. Cl. 310—80 **5 Claims**



1. A permanent magnet motor comprising

a pair of permanent magnets positioned in spaced relationship,

a reciprocating magnetizable member positioned between said permanent magnets,

power-take-off means coupled to said reciprocating member,

spring means biasing said reciprocating member between said permanent magnets,

a pair of magnetic shields positioned on either side of said reciprocating member and between said permanent magnets to shield said reciprocating member from the magnetic fields of said permanent magnets, and

means to move said shields in and out between said reciprocating member and said permanent magnets to alternately shield and expose said member to the magnetic fields of said permanent magnets,

whereby the actions of the magnetic fields of the permanent magnets and the spring means cause the reciprocating magnetizable member to reciprocate between the permanent magnets.

3,879,623

WINDOW REGULATOR DRIVING MEANS FOR AN AUTOMOBILE

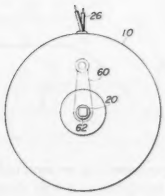
Shiuichi Miyake, Tokyo, Japan, assignor to Nihon Radiator Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 272,699, July 17, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,319

Claims priority, application Japan, Sept. 16, 1971, 46-84414; Sept. 16, 1971, 46-84415; Sept. 18, 1971, 46-85291

Int. Cl. H02k 7/00

U.S. Cl. 310—83 5 Claims



1. A window regulator driving means for an automobile, comprising, in combination, a printed motor, a double epicyclic gearing, an output gear and a housing therefor, said printed motor comprising a printed rotor, at least one permanent magnet, at least one brush, and a magnetic permeable plate, said magnetic permeable plate dividing said housing interior into discrete chambers, said printed rotor, said permanent magnet, and said brush occupying one of said discrete chambers for thereby forming a chamber for said printed motor, said printed rotor being rotatable in said discrete chamber, said double epicyclic gearing occupying another of said discrete chambers, whereby said another discrete chamber may be filled with lubricating oil for lubricating said gearing without interrupting said printed motor which is located within said first discrete chamber, said double epicyclic gearing comprising a primary sun gear, a primary planetary gear, a primary planetary gear carrier, a secondary sun gear, a secondary planetary gear, a secondary planetary gear carrier, and an internal gear, said primary sun gear being connected coaxially with said printed rotor, said primary planetary gear being larger than and in mesh with said primary sun gear and rotatably held on said primary planetary gear carrier, said secondary sun gear being connected coaxially with said primary planetary gear carrier, said secondary planetary gear being larger than and in mesh with said secondary sun gear and rotatably held on said secondary planetary gear carrier, and said internal gear being connected coaxially with said magnetic permeable plate and larger than and in mesh with said primary planetary gear and said secondary gear, and said output gear being adapted to be driven by said secondary planetary gear carrier and to drive said window regulator, whereby said window regulator is driven by said printed motor at a lower speed than a speed at which said printed motor runs.

3,879,624

ROTARY SOLENOIDS IN BRUSH-APPLICATION GEAR

Frederick Raymond Jones, Brentwood, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

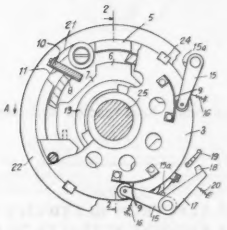
Filed Apr. 24, 1973, Ser. No. 354,064

Claims priority, application United Kingdom, May 4, 1972, 20867/72

Int. Cl. H02k 13/00

U.S. Cl. 310—240 5 Claims

1. A device for applying brushes to the commutator of an electrical starter motor, which comprises brush-lifting spring means which normally maintain the brushes clear of the commutator, and a rotary solenoid having a stator and a rotor member rotatable relative thereto about an axis of rotation and operative, when the solenoid is energised, to cause application of the brushes to the commutator against the action of said spring means, said rotary solenoid, said stator including a set of outer pole pieces spaced circumferentially about said axis, a set of inner pole pieces, similarly spaced circumferentially about said axis and arranged to respectively face the outer pole pieces across a radial gap, a magnetising winding arranged to produce a magnetic field by which all the inner stator pole pieces and all the outer stator pole pieces are magnetised with respectively opposite polarities, and said rotor member having a set of magnetisable pole pieces which



are spaced circumferentially about said axis at an angular pitch corresponding to that of the stator pole pieces so that rotation of the rotor from a normal position to an operative position will cause each rotor pole piece to enter the gap between an inner stator pole piece and the corresponding outer stator pole piece, said rotor member being equipped with auxiliary pole pieces each of which extends radially from the trailing end of one of said rotor pole pieces beyond both limits of the gap between the inner and outer stator pole pieces to face the ends of an inner and an outer stator pole piece so that at the completion of rotor movement to said operative position the auxiliary pole piece reaches a position of near-contact with the said ends of the stator pole pieces.

3,879,625

ZIRCONIA REFLECTOR COATING ON QUARTZ LAMP ENVELOPE

Charles I. McVey, Shaker Hts., and O. Manuel Uy, Cleveland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

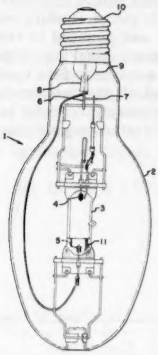
Filed Oct. 9, 1973, Ser. No. 404,178

Int. Cl. H01j 7/24

U.S. Cl. 313—27 4 Claims

1. A fused silica envelope having an optically reflective coating of finely divided ZrO_2 adherent thereto and an inter-

mediate adhesion layer consisting of very fine aluminum oxide and boric oxide heat-reacted with the silica surface, said coating of zirconium being heat-reacted with said intermediate layer.

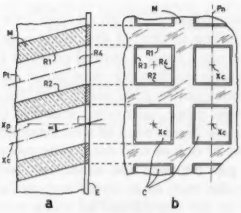


3,879,626

CHANNEL ELECTRON MULTIPLIER HAVING SECONDARY EMISSIVE SURFACES OF DIFFERENT CONDUCTIVITIES

Derek Washington, and Andrew John Guest, both of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,097
Int. Cl. H01j *43/22, 43/24*
U.S. Cl. 313—105 **4 Claims**



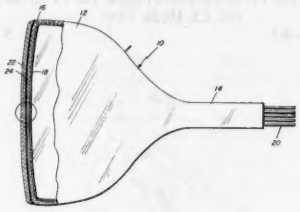
1. A surface-conducting channel plate of the continuous dynode type, comprising a matrix of elongate channels having polygonal cross-section and extending between two opposite planar and parallel faces of the plate, an input electrode and output electrode provided on said faces, said channels being inclined at an acute angle with respect to one of two substantially orthogonal planes normal to said faces, the conductive inner surface of the plate surrounding each channel having secondary emissive areas facing said one orthogonal plane and extending continuously in the longitudinal direction between said electrodes and further having areas of reduced conductivity extending continuously between said secondary emissive areas and being substantially parallel with the other orthogonal plane.

3,879,627

DISPLAY TUBE WITH NEUTRAL DENSITY FILTRATION

Ronald C. Robinder, Marshfield, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 25, 1974, Ser. No. 454,188
Int. Cl. H01j *5/16, 61/40*
U.S. Cl. 313—112 **10 Claims**



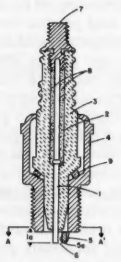
1. A display tube comprising an evacuated envelope having a clear transparent faceplate in a wall thereof, a layer of phosphor material adjacent the inner side of said faceplate for generating light in the visible spectrum, a clear transparent protective panel adjacent the outer side of said faceplate, and a bonding material between said faceplate and panel, said bonding material having selected neutral density filtration characteristics in the visible spectrum.

3,879,628

SPARK PLUG

Arthur E. Felt, Plymouth, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 11, 1973, Ser. No. 405,664
Int. Cl. H01t *13/32*
U.S. Cl. 313—141 **4 Claims**



1. An air gap spark plug suitable for supplying a spark to ignite fuel in a combustion chamber which consists essentially of

a. a center electrode,

b. an insulator having a central passageway running longitudinally therethrough to receive said center electrode,

c. a metal shell enclosing a portion of said insulator, the lower end of said shell

1. extending beyond said insulator and

2. having a single ground electrode extending therefrom in a plane which is substantially parallel to the long axis of said center electrode,

d. said center electrode extending beyond the lower end of said shell at least a sufficient distance to define an air gap between the side, and not the end, of said ground electrode and said center electrode, said air gap being no lower than the distal end of said center electrode,

thus providing an air gap for a spark to be generated between said center electrode and the side of said ground electrode, in

a direction substantially perpendicular to the long axis of said center electrode.

3,879,629

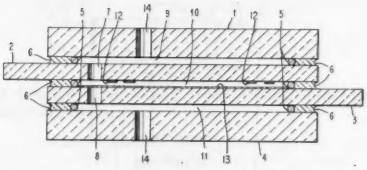
GAS DISPLAY PANEL AND METHOD OF MAKING SAME

Robert D. Durand, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1973, Ser. No. 372,873

Int. Cl. H01j *17/16, 9/26*

U.S. Cl. 313—220 **12 Claims**



9. In a gas display panel which comprises two active glass plates sealed together in a spaced relationship with a center chamber therebetween, each of said active glass plates having dielectric coated conductive electrodes on the inner surface thereof, said center chamber being filled with an illuminable gas, the improvement comprising:

a first passive plate sealed to one of said active plates in a spaced relationship thereto, forming a first outer chamber therebetween; and

a second passive plate sealed to the other of said active plates in a spaced relationship thereto, forming a second outer chamber therebetween,

both of said passive plates being free of electrical connections that would directly affect the displaying of information on said gas display panel.

3,879,630

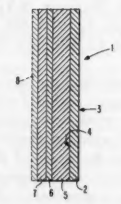
REFLECTIVE DEFORMOGRAPHIC TARGET ASSEMBLY

Bernard I. Halperin, Glen Aubrey; Gerald W. Manley, Vestal, and Neil M. Poley, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1974, Ser. No. 456,714

Int. Cl. H01j *29/10*

U.S. Cl. 313—394 **10 Claims**



10. A reflective deformographic storage tube target of the type having a deformographic material layer and a compatibly deformable conductive outer silver layer characterized in that: a gold layer deformable compatibly with the deformographic and silver layers is disposed between said deformographic material layer and said silver layer to inhibit the degradation of the reflecting characteristics of said target when subjected to high temperatures.

3,879,631

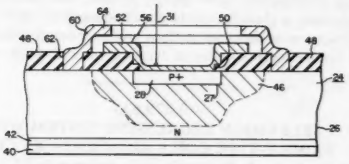
SEMICONDUCTOR TARGET WITH REGION ADJACENT PN JUNCTION REGION SHIELDED

Karl K. Yu, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 315,257, Dec. 14, 1972, abandoned. This application July 19, 1974, Ser. No. 490,180

Int. Cl. H01j *29/45, 31/38*

U.S. Cl. 313—366 **2 Claims**



1. A planar semiconductive diode target comprising, a body portion of a semiconductive material of a first type conductivity with a substantially planar surface, a central region of a second opposite type semiconductive material extending from the planar surface into the body portion a predetermined distance, with the first type semiconductive material selected from N-type and P-type semiconductive material and the second type being the other type, with a PN junction formed at the interface between the opposite type semiconductive materials, a depletion region formed at said PN junction and extending into the body portion about the PN junction, an insulating layer disposed upon the planar surface peripherally about the central region and overlapping the peripheral edge of the central region, a first contact electrode disposed upon the central region in ohmic contact with the central region material and overlapping a portion of the insulating layer, a second shielding electrode disposed in ohmic contact with and upon the planar surface of the body portion of the target about the insulating layer beyond the outer edge of the depletion region at the planar surface of the body portion, and which second shielding electrode extends from the planar surface and has an inwardly projecting extending end portion which is spaced above the insulating layer and the peripheral edge of the first contact electrode, said target being disposed within a cathode ray tube and having its PN junction side facing the cathode therein.

3,879,632

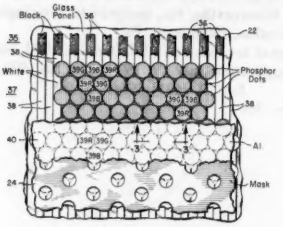
HIGH-BRIGHTNESS, HIGH-CONTRAST CATHODE-RAY TUBE FACEPLATE PANEL

Leonard Dietch, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 190,013, Oct. 18, 1971, which is a continuation-in-part of Ser. No. 13,564, Feb. 24, 1970, Pat. No. 3,614,503. This application Sept. 28, 1972, Ser. No. 293,187

Int. Cl. B44d *1/50*; **G03c** *5/00*

U.S. Cl. 313—474 **5 Claims**



1. As a separate article of commerce, for use in manufacturing a cathode-ray tube image screen, the subcombination comprising a glass faceplate panel adapted to receive a phosphor screen on its inner surface and precoated with reflective and non-reflective grilles in registration with each other.

3,879,633

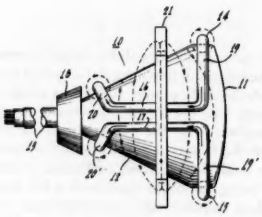
TELEVISION DEGAUSSING SYSTEM WITH SADDLE-TYPE COILS ADJACENT CRT CONE

John Stark, Jr., Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 331,669, Dec. 19, 1963, abandoned. This application Aug. 4, 1966, Ser. No. 570,382

Int. Cl. H01f *13/00*; **H01j** *31/20*

U.S. Cl. 315—8 **17 Claims**



1. Degaussing apparatus for a television picture tube adapted to be energized periodically by alternating current of a magnitude which initially is appreciable and which diminishes effectively to zero comprising in combination:

a pair of saddle type coils mounted respectively on opposite sides of the conical portion of said tube,

each of said coils having two side conductor groups extending generally longitudinally of said tube along and from the large to the small end of said conical tube portion,

side conductor groups being connected by end turns respectively at the large and small ends of said conical tube portion; and

means connecting said coils to said source of alternating current in a manner to produce an alternating magnetic field within said picture tube.

3,879,634

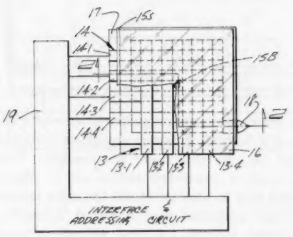
MANUFACTURE AND OPERATION OF GAS DISCHARGE PANEL

Lawrence V. Pfaender; Richard G. Mathias; Theodore C. Baker, all of Toledo; James F. Nolan, and Wolfgang W. Bode, both of Sylvania, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. Nos. 163,043, July 15, 1971, Pat. No. 3,746,420, and Ser. No. 783, Jan. 5, 1970, Pat. No. 3,614,511, and Ser. No. 686,384, Nov. 24, 1967, Pat. No. 3,499,167. This application May 29, 1973, Ser. No. 364,709

Int. Cl. H05b *39/00*

U.S. Cl. 315—169 TV **2 Claims**



1. A method of operating a gaseous discharge display panel having a pair of support members at least one of which is transparent, joined in spaced apart relation to define a single thin gas chamber, a plurality of row conductor elements on the inner surfaces of each of the support members, respectively, a dielectric film on each of the conductor means, respectively, the conductors on one of the support members being oriented on its supporting member in a direction transverse to the direction of the other of said conductor member to thereby define a cross conductor matrix for locating selected discharge sites in the gas medium in said gas chamber, an ionizable gas medium within the chamber and contacting the surfaces of the dielectric, the ionizable gas producing, upon ionization, and within a selected volume thereof, conditioning photons, said method including the steps of turning "on" an entire line of discharge sites in the matrix thus formed, and maintaining said line of sites in said "on", state during normal operation of the device, to thereby permit photons generated thereat to be passed in open photonic communication to discharge sites remote therefrom for thereby conditioning said remote sites.

3,879,635

CONVERGENCE AND TRIAD DISTORTION CORRECTION MEANS FOR WIDE ANGLE CATHODE RAY TUBE

Bennie A. Findeisen, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Feb. 6, 1973, Ser. No. 330,053

Int. Cl. H01j *29/70*, *29/56*

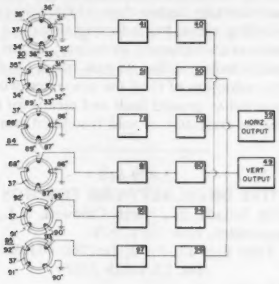
U.S. Cl. 315—368 **19 Claims**

1. Means for controlling the size and shape of a triangular array of electron beams within a color television cathode ray tube of the shadow mask type, comprising:

a first plurality of windings disposed in a substantially regular array about the neck of the cathode ray tube and producing six time-varying magnetic poles for causing the electron beams to simultaneously advance or retreat from the center of the triangular array in accordance with position of said beams within said tube; and

a second plurality of windings disposed in a substantially rectangular array about the neck of the cathode ray tube and producing four time-varying magnetic poles for caus-

ing the electron beam array to expand in a first direction and contract in a second direction perpendicular to the



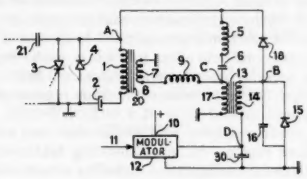
first direction in accordance with position of said beams within said tube.

3,879,636

CIRCUIT ARRANGEMENT FOR CORRECTING HORIZONTAL PIN CUSHION DISTORTION

Andre Lamoureux, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 7, 1973, Ser. No. 422,974
Claims priority, application France, Dec. 8, 1972, 72.43743
Int. Cl. H01j *21/56*
U.S. Cl. 315—371 **10 Claims**



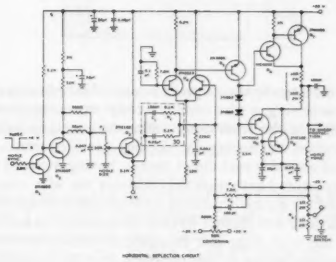
1. In a circuit arrangement for correcting horizontal pin cushion distortion of a television receiver or the like, which circuit arrangement includes: (1) a main sweep generator having a final stage which feeds a primary winding of a line sweep transformer, the primary winding being connected in series with a first capacitor whose one terminal is connected to circuit ground, the final stage being provided with a switching circuit means which includes two circuit components connected in parallel with one another and in series with the primary winding and the first capacitor, and the switching circuit means being open during intervals of return of line sweep and closed during forward line sweep; (2) an auxiliary sweep generator including a modulator, which furnishes a modulated correction voltage at a terminal of a second capacitor; (3) a compensation inductor; and (4) a horizontal deflection winding, the inductor and the horizontal deflection winding being connected together between the main sweep generator and the auxiliary sweep generator, the improvement comprising: a second capacitor; a third capacitor; a first diode; a second diode; and an auxiliary transformer having a primary winding and at least one secondary winding for applying a correction voltage from said modulator to said horizontal deflection winding and to said compensation inductor, said primary winding being connected from one of its terminals to said second capacitor and having its second terminal connected to a parallel network composed of said third capacitor and said first diode, which allows current to flow through said primary winding during forward sweeps in one direction, said second terminal of said primary winding also being connected via said second diode, which is opppositely poled with respect to said first diode, to said final stage of said main sweep generator, said second diode allowing current to flow through said primary winding and said final stage in a direction opposite to said one direction, and said first and second diodes both being non-conducting during return intervals of line sweep.

3,879,637

TELEVISION CAMERA

William H. Woodworth, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1972, Ser. No. 238,710
Int. Cl. H01j *29/70*
U.S. Cl. 315—380 **5 Claims**



1. A television camera, comprising:

means for imposing an image on a surface, scanning the surface with an electronic beam, and providing an output in response to the image on the surface;

means for amplifying the output of said imposing, scanning, and providing means whereby the amplified output can be presented on a television monitor;

means for controlling the trace of the beam of said imposing, scanning, and providing means including means for preventing said beam if the beam fails to scan;

means for preventing said beam during a preselected period of said trace;

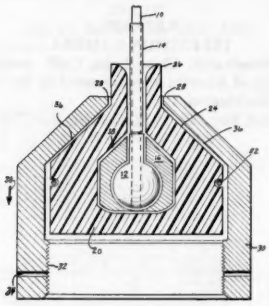
means coupled to said amplifying means, said trace controlling means, and said preselected period beam preventing means for synchronizing the operation of said television camera; and

means coupled to said imposing, scanning and providing means for selectively reducing the area scanned and rate of scan of said imposing, scanning and providing means to cause a zoom effect with respect to the image imposed on said surface, including a ramp function signal generator and an adjustable gain amplifier providing an output to said imposing, scanning and providing means wherein the adjustable gain amplifier is capacitively coupled to the output of said generator to prevent any D.C. valve from being coupled to said amplifier, and the slope of the ramp function applied to said imposing, scanning and providing means is adjustably controlled by the gain of said adjustable gain amplifier to cause said zoom effect, such that the center of the image scanned before said reduction is in the center of the image scanned during said reduction.

3,879,638
HELICOPTER RESCUE HOIST, STATIC ELECTRIC SHOCK INSULATOR

Douglas B. Day, 1601 Benson Dr., Dayton, Ohio 45406

Filed Oct. 11, 1973, Ser. No. 405,721
Int. Cl. F16g *11/00*; H05f *3/00*
U.S. Cl. 317—2 R 1 Claim

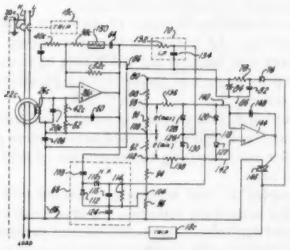


1. An electrically shock proof adapter for helicopter rescue hoists comprising: a wire rope; a swedge means securely fixed to one end of the wire rope; collet means surrounding said shaped means and having one sloping exterior surface; insulator means encasing said collet means, having a closed surface and an apertured extension for receiving the wire rope, and a metal adapter means, encasing said insulator means having a sloped surface and further having an aperture on one end for passing the wire rope and insulator extension therethrough and threaded means at the opposing end for receiving similarly threaded rescue equipment.

3,879,639
GROUND FAULT INTERRUPTERS

Richard C. Sircom, Scarborough, Ontario, Canada, assignor to Federal Pacific Electric Company, Newark, N.J.

Continuation of Ser. No. 320,855, Jan. 4, 1973. This application Sept. 10, 1973, Ser. No. 395,422
Int. Cl. H02h *3/16*
U.S. Cl. 317—18 D 7 Claims

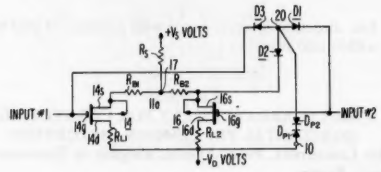


1. A neutral-to-ground fault detector for a distribution circuit to supply alternating current at about 60 Hz to a load, where the circuit includes line and neutral conductors extending to load-connection terminals, and where the neutral conductor has a ground connection, said neutral-to-ground fault detector including a differential current transformer having a core, primary windings forming current paths in series with said line and neutral conductors respectively, between said load-connection terminals and said ground connection of said neutral, said primary winding being arranged to produce mutually cancelling magnetic effects in the core due to load current carried thereby, and (a) multi-turn winding means on the core, means including a capacitor connected to said (multi-turn) winding means for producing resonance therein at a frequency substantially higher than 60 Hz, said core and said resonated winding means being formed to have a Q greatly in excess of unity at the resonant frequency, means for exciting said resonated winding within its pass band, (and) means for detecting the reduction of Q of the resonated winding resulting from a neutral-to-ground fault and means for detecting an abnormal rise in excitation of said resonated winding.

3,879,640
PROTECTIVE DIODE NETWORK FOR MOS DEVICES

Otto Heinrich Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 11, 1974, Ser. No. 441,050
Int. Cl. H02h *3/20*
U.S. Cl. 317—31 8 Claims



1. The combination comprising:

a substrate of semiconductor material of first conductivity type; a layer of semiconductor material of second conductivity type disposed on said substrate and forming a first PN junction therewith;

first and second field effect transistors, each comprising first and second spaced apart regions of first conductivity type, defining the source and drain regions, respectively, disposed in said layer at a surface thereof, and a gate electrode overlying said surface between said first and second regions; means connecting said transistors in a differential configuration including means connecting the source regions of said first and second transistors to a common point;

means protecting said first and second transistors against overvoltages applied between the gates of said transistors and between the gates and the sources of said transistors comprising: an additional region of first conductivity type disposed within said layer and forming a second PN junction therewith; three spaced apart regions of second conductivity type disposed within said additional region, each of said three spaced apart regions forming a PN junction with said additional region; and

means electrically connecting the gate electrode of said first transistor to one of said three regions, means electrically connecting the gate electrode of said second transistor to a second one of said three regions, and means connecting the third one of said three regions to said common point.

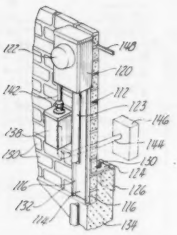
3,879,641
UTILITY METER PEDESTAL-FOUNDATION MOUNTING

Curtis W. Byrd, 42501 JoEd St., Sterling Heights, Mich. 48078

Continuation-in-part of Ser. No. 224,166, Feb. 7, 1972, abandoned. This application Aug. 10, 1973, Ser. No. 387,518
Int. Cl. H02b *9/00*
U.S. Cl. 317—104 10 Claims

1. A utility meter pedestal for mounting on a foundation of the type having parallel front and rear surfaces and a top surface before above-ground walls are erected on said top surface of said foundation and comprising: a rigid elongate

support member having top and bottom ends and adapted to be placed against and parallel to the front surface of said foundation and to extend vertically upwardly to a point substantially above the top surface thereof, a substantially L-shaped bracket secured to the rear of said member adjacent the lower end and having a vertical portion spaced rearwardly therefrom to embrace said foundation between said vertical portion and said member and to support and secure the elongate support member on said foundation prior to the erection of said wall, mounting means on the member adjacent the upper end and a utility meter box mounted on the mounting means so as to be carried by said member and supported relative to said foundation both prior to and after the erection of the wall on the foundation, said L-shaped bracket including means for adjusting the horizontal spacing between support member and said vertical portion.



3,879,642
MEMORIZER FOR COUNTING SYSTEM

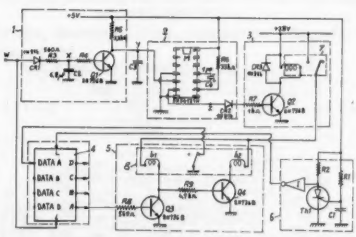
Jacques A. Guimier, Chelles-les-Coudreaux, and Pierre F. Coutin, Paris, both of France, assignors to R. Alkan & Cie, Valenton, France

Filed Dec. 4, 1973, Ser. No. 421,542

Claims priority, application France, Dec. 22, 1972, 72.45946

Int. Cl. H01h *47/32*

U.S. Cl. 317—155.5 **2 Claims**



1. Device for memorizing a counting system in case of failure in the supply mains, comprising a counting system utilizing electronic decades, magnetic-lock two-step relays of reduced over all dimensions, wherein a time lag is introduced in the transfer of said counting system state to said two-step relays in order that this transfer takes place only at the end of a sequence of pulses in case said counting system is controlled by means of a train of pulses, a one-step relay supplying energizing current to said two-step relays reproducing the state of said counter system, a univibrator circuit capable of delivering at the end of each train of counting pulses an output pulse of predetermined duration to said one-step relay, a capacitor controlling said univibrator circuit and charged with the counting pulses, and said capacitor being capable of introducing said time lag in the control of said two-step relays through the time constant of the discharge of said capacitor.

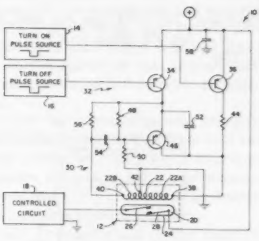
3,879,643
OPERATING CIRCUIT AND METHOD FOR REMANENT REED RELAYS

Linus O. Hubbard, Chicago, Ill., assignor to Phone-Aid Co., Inc., Chicago, Ill.

Filed Dec. 13, 1973, Ser. No. 424,567

Int. Cl. H01f *13/00*

U.S. Cl. 317—157.5 **20 Claims**



18. A method for demagnetizing a remanent reed of a reed relay comprising:

developing a damped oscillation in the winding of the relay.

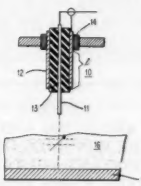
3,879,644
PROBE RESPONSIVE TO CONDITIONS OF MATERIAL

Frederick L. Maltby, Montgomery County, Pa., assignor to Drexelbrook Controls, Inc., Glenside, Pa.

Division of Ser. No. 32,002, April 27, 1970, Pat. No. 3,706,980. This application Oct. 20, 1972, Ser. No. 299,439

Int. Cl. H01g *7/00*

U.S. Cl. 317—246 **2 Claims**



1. A probe system responsive to the condition of materials comprising:

conductive means having materials juxtaposed thereto; and

a probe apparatuss comprising:

a conductive probe electrode;

solid insulation means;

a hollow conductive guard shield having outer walls forming an interior cavity receiving said probe electrode, said guard shield being electrically insulated from said probe electrode and said conductive means by said solid insulation means; and

said solid insulation means contacting said guard shield, one portion of said insulation means supporting said probe electrode on said guard shield and another portion of said insulation means extending outwardly beyond said outer walls, said guard shield being interposed between said one portion and said other portion so as to substantially eliminate any current leakage path through said solid insulation means from said probe electrode through said other portion;

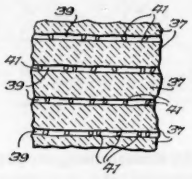
said outer walls having a surface not covered by said insulation means so as to be exposed to direct contact

with the materials, said exposed surface having an overall length measured in a direction from said probe electrode to said insulation means along a surface of said probe apparatus exposed to direct contact with the materials, said overall length being substantially greater than the minimum thickness of said outer walls of said guard shield.

3,879,645
CERAMIC CAPACITORS

Truman C. Rutt, Niagara Falls, and James A. Stynes, Lewiston, both of N.Y., assignors to N L Industries, Inc., New York, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,243
Int. Cl. H01g *3/06*
U.S. Cl. 317—258 **12 Claims**



1. A capacitor which comprises: a plurality of superposed dielectric strata and metal layers, said strata being of dense, ceramic material integrally sintered together at a plurality of edge portions thereof to form a monolithic matrix; said metal layers having a structure characteristic of cast metal and a melting point lower than the maximum temperature employed in sintering said ceramic material, and at least one of said metal layers intervening between an adjacent pair of said strata; at least one distinct pillar between said adjacent pair of strata, said pillar extending only between said pair of strata with its top and bottom contacting relatively small areas of said pair of strata and with its sides being surrounded by said metal layer; and electrical connections to said metal layers.

3,879,646
SYSTEM FOR ADJUSTING AND COMMUTATING CURRENT IN THE WINDINGS OF AN AC MACHINE FROM A CONSTANT-VOLTAGE DC SUPPLY

Albert Wiart, Val d'Oise, France, assignor to Jeumont Schneider, Puteaux (Hauts de Seine), France

Filed July 23, 1973, Ser. No. 382,042
Claims priority, application France, July 25, 1972, 72.26727
Int. Cl. H02k *28/00*
U.S. Cl. 318—138 **13 Claims**

1. A circuit for commutating current in the windings of an n-phase electrical machine, wherein said current is derived from a constant current supply having DC output terminals, said circuit comprising:

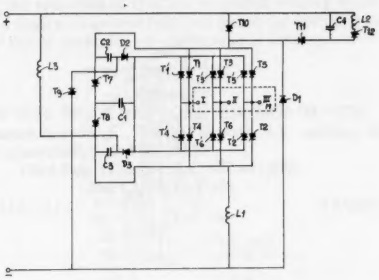
a. a current chopper having one end connected to one of said DC supply output terminals for obtaining from said supply a DC current of an adjustable given value,

b. an inductor having one end connected to the other one of said DC supply output terminals for smoothing the adjusted current obtained from said current chopper,

c. a 2 *n*-arm thyristorized routing bridge having an input side and an output side with *n* center points, said *n* center points connected to the *n*-phase electrical machine, one side of said routing bridge connected to the other side of said current chopper, the other side of said routing bridge connected to the other side of said smoothing inductance,

d. a 2 *n*-arm semiconductor bridge having an input side and an output side with *n* center points, said *n* center points connected to the *n*-phase electrical machine,

e. turn-off circuit means connected between each side of said semiconductor bridge and a corresponding side of said routing bridge for turning off the routing thyristors of said routing bridge,



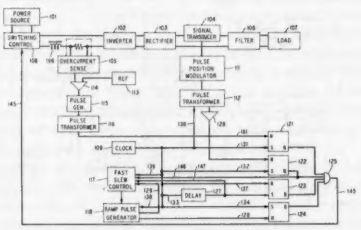
f. switching circuit means connected between each side of said semiconductor bridge and a corresponding side of said routing bridge for progressively transferring current from the semiconductor bridge to the routing bridge, and

g. discharge circuit means for discharging excess charge stored in the switching circuit means.

3,879,647
DC TO DC CONVERTER WITH REGULATION HAVING ACCELERATED SOFT START INTO ACTIVE CONTROL REGION OF REGULATION AND FAST RESPONSE OVERCURRENT LIMITING FEATURES

Billy Harold Hamilton, Summit; Frank Carl La Porta, Millington, and Robert Edward Schroeder, Parsippany, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 7, 1974, Ser. No. 477,212
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **6 Claims**

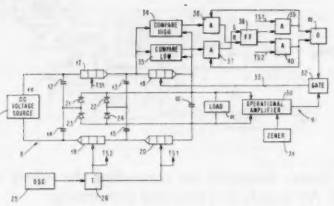


1. In a signal processing system, means to accept input signals, means to regulate said signals and output means, said means to regulate including means to generate feedback pulses and logic means responsive to said feedback pulses, means to inhibit the response of said logic means for a short time period at the beginning of each cycle, and signal adjustment means to control the rate of change of said output signal during turnon and turnoff operations, said signal adjustment means comprising means to generate a ramp pulse signal whose relative position changes in each successive cycle of operation, and means to control the rate of change of said relative position including means to increase the rate of change during said short time period.

3,879,648
CAPACITIVE BASED VOLTAGE REDUCER AND REGULATOR

Harry S. Hoffman, Jr., Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1973, Ser. No. 425,387
Int. Cl. H02p 13/32
U.S. Cl. 321—2 8 Claims



1. In an electrical circuit in which power from a voltage source at a relatively high voltage is supplied to a load at a reduced voltage, the combination comprising:

voltage reducing means connected between said source and said load for supplying power from said source to said load, said voltage reducing means being operable in two modes each providing a different degree of voltage reduction, said voltage reducing means comprising a selectively controllable transistor providing a variable voltage drop;

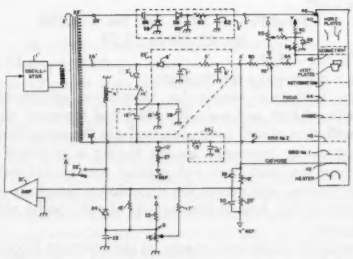
voltage regulating means responsive to the voltage drop across the load for controlling said transistor in accordance therewith to provide a dynamic proportional range of voltage regulation when said voltage reducing means is operating in each of said modes;

and control means responsive to the voltage drop across said transistor for switching said voltage reducing means between said modes when predetermined limits of voltage drop across said transistor are reached.

3,879,649
SELECTABLE RECTIFIED ALTERNATING VOLTAGE POWER SUPPLY

John Durecka, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 11, 1974, Ser. No. 441,594
Int. Cl. H02p 13/22
U.S. Cl. 321—2 18 Claims



1. A power supply circuit for providing a plurality of selected output voltages to a utilization device, comprising;

means for generating a transcendental waveform of constant peak amplitude, said means including input means and output means;

means for converting said transcendental waveform, said means including an input means connected to output means of said means for generating a transcendental waveform and output means;

first recitfier means for rectifiying said converted transcendental waveform,

said means including an input means connected to output means of said means to convert said transcendental waveform and output means;

second rectifier means for rectifying said converted transcendental waveform, said means including an input means connected to output means of said means to convert said transcendental waveform and output means;

comparison means for comparing said rectified converted transcendental waveform from said second rectifier means and a reference signal, said means including first input means connected to output means of said second rectifier means, second input means connected to said reference signal and output means;

amplifier means for amplifying said compared rectified converted transcendental waveform and said reference signal, said means including input means connected to output means of said comparison means and output means connected to input means of said means for generating said transcendental waveform;

control means for changing said second rectifier means, said means including output means connected to said input means of said second rectifier;

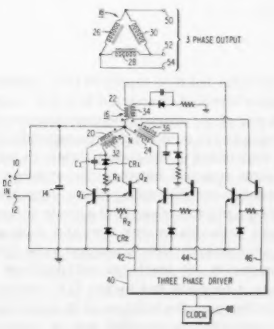
source means for generating an additional reference signal means, said means including input means connected to said output means of said control means and output means connected to input means of said amplifier means; and

utilization means connected to said output terminals of said first rectifier means and said second rectifier means.

3,879,650
DC TO POLYPHASE INVERTER UTILIZING A PLURALITY OF SWITCHING DEVICE AND A TRANSFORMER HAVING A PLURALITY OF PRIMARY AND FEEDBACK WINDINGS CONNECTED IN CIRCUIT WITH THE SWITCHING DEVICE

Eugene Lachocki, Turnersville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 1, 1973, Ser. No. 384,710
Int. Cl. H02m 7/48
U.S. Cl. 321—5 11 Claims



1. A circuit for translating a DC input signal to polyphase time varying output signals, said circuit comprising:

a transformer having a plurality of primary windings and a plurality of secondary windings;

means for applying said DC input signal to each one of said primary windings;

a plurality of switching devices, each of said devices being operated between an on and an off state of current conduction, each one of said switching devices being connected in circuit with a corresponding one of said plurality of primary windings;

said transformer further having a plurality of feedback windings, each feedback winding being associated with a corresponding one of said primary windings, each feedback winding being connected in circuit with a corresponding one of said switching devices for providing a regenerative feedback signal in relation to the operation of said corresponding switching device;

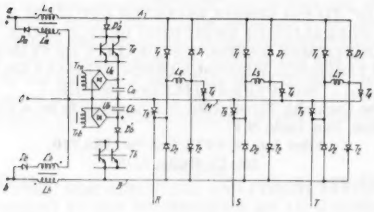
switch control means for controlling the state of current conduction of said plurality of switching devices, the conductive state of each one of said plurality of switching devices bearing a predetermined relationship one to another; and

means associated with said plurality of secondary windings for developing said polyphase output signals.

3,879,651
UNDULATOR

Marcel Etter, 3 bis, chemin des Pontets, Grand-Lancy, Switzerland

Filed July 6, 1973, Ser. No. 377,099
Claims priority, application Switzerland, July 14, 1972, 10632/72
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 C **2 Claims**

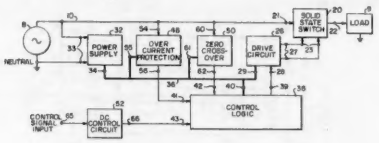


1. In an inverter fed by a supply of D.C. including a positive and a negative terminal connected to a D.C. supply and feeding at least one phase output, the combination of at least one phase unit adapted to connect the corresponding phase output selectively with either of the supply terminals and including at least two arms inserted between the corresponding supply terminal and the corresponding phase output and each arm constituted by a main thyristor and a diode connected in series through their cathodes in one arm and their anodes in the other arm, said main thyristors adapted to be ignited at predetermined moments, at least one intermediate voltage lead connected to a terminal fed by the D.C. supply at a voltage intermediate between the voltages of its terminals, two further thyristors connected in parallel and of opposite polarities between each phase output and said intermediate voltage lead and a first extinguishing circuit connected between a supply terminal and the intermediate voltage lead, and a second extinguishing circuit connected between the other terminal and the intermediate voltage lead, and controlling the extinction of the corresponding main and further thyristors.

3,879,652
AC SOLID STATE POWER CONTROLLER WITH MINIMIZED INTERNAL POWER SUPPLY REQUIREMENTS

William W. Billings, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 13, 1973, Ser. No. 387,991
Int. Cl. G05f *1/56*
U.S. Cl. 323—22 SC **6 Claims**



1. A power controller for controlling the supply of power from an AC supply to a load and comprising:

a switch having supply and load terminals and also having at least one drive terminal at which the selective application of predetermined drive signal alters the conductivity of said switch;

a drive circuit for applying drive signals to said switch and having at least one output terminal electrically coupled, respectively, to said at least one drive terminal of said switch, said drive circuit having a control input terminal and a power input terminal;

a power supply circuit having input terminals for connection to the AC supply and an output terminal connected to said power input terminal of said drive circuit, said power supply circuit comprising elements for the conversion of AC power to DC power on a single power bus;

a control logic circuit having an output terminal connected to said control input terminal of said drive circuit and a power input terminal connected to said output terminal of said power supply circuit;

at least one control and protection circuit having at least one output signal terminal connected to said control logic circuit and having at least one input signal terminal connected to the AC supply, said at least one control and protection circuit being operative without energization from any DC power supply separate from that of said power supply circuit.

3,879,653
MICROWAVE SPECTROMETER EMPLOYING A BIMODAL CAVITY RESONATOR

James S. Hyde, Menlo Park, and Martin A. Huisjen, Palos Verdes, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Feb. 6, 1974, Ser. No. 440,108
Int. Cl. G01n *27/78*
U.S. Cl. 324—.5 R **13 Claims**

1. In a microwave spectrometer:

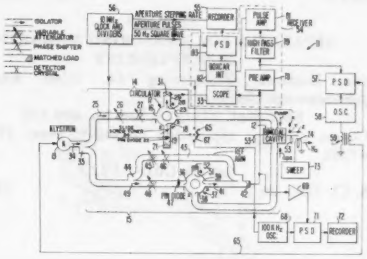
cavity resonator means for supporting electromagnetic fields of first and second orthogonal resonant modes of oscillation of said cavity resonator at the same frequency, said cavity resonator means having a common region shared by said first and second orthogonal modes of oscillation, and means for disposing a sample to be analyzed within said shared region of said cavity resonator means;

a source of microwave energy at the resonant frequency of said first and second orthogonal modes of oscillation;

first means for coupling microwave energy derived from said source of microwave energy to said cavity resonator means for exciting said first resonant mode of oscillation to the substantial exclusion of exciting said second mode of oscillation except for cross coupling of said first and second resonant modes due to resonance of the sample;

second means for coupling microwave energy derived from said source of microwave energy, and at the same frequency as coupled to said cavity resonator via said first coupling means, to said cavity resonator means for exciting said second resonant mode of oscillation to the substantial exclusion of exciting said first resonant of oscillation except for cross coupling of said first and second modes due to resonance of the sample; and

means for detecting microwave resonance of the sample to be analyzed.

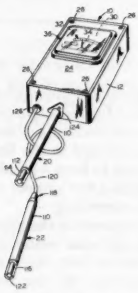


3,879,654

BATTERY CELL TESTER

James W. Kessinger, Elizabethtown, Ky., assignor to Kessinger Industries, Inc., Elizabethtown, Ky.

Filed Feb. 23, 1973, Ser. No. 335,438
Int. Cl. G01n *27/46*
U.S. Cl. 324—29.5 **7 Claims**



1. A multi-purpose battery tester comprising:

a. a housing including a case;

b. a pair of probe units connected mechanically to said case and operable for performing four independent tests on a battery by varying the points of engagement of said pair of probe units with the battery;

c. circuit means mounted within said case electrically connected in circuit relationship with said pair of probe units and operable to determine alternately the condition of the individual cells of a battery when said pair of probe units are inserted successively into adjacent pairs of cells of the battery, the short or drain condition of the battery when said pair of probe units are inserted successively into pairs of alternate cell openings of the battery, the condition of a voltage regulator connected in electrical circuit with a battery when one of said pair of probe units is inserted into the cell opening nearest the positive terminal of the battery and the other of said pair of probe units is touched to the positive terminal of the battery and the ability of a battery to take a charge by repeating each of the three preceding tests while the battery is being charged, said circuit means including a first pair of diodes connected in circuit relation with one of said pair of probe units, a calibration potentiometer having one side thereof connected in circuit relation with said first pair of diodes, a second pair of diodes connected in circuit relation with the other side of said calibration potentiometer and to the other of said pair of probe units, and a resistor connected in circuit relation between said pair of probe units, said first and second pairs of diodes, said resistor and said calibration potentiometer all being mounted on a printed circuit board and connected in circuit relation therewith so as to provide a battery cell tester with a circuit insensitive to polarity; and

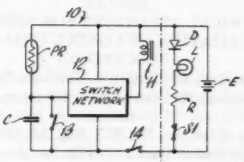
d. display means mounted in said case electrically connected in circuit relationship with said circuit means, said display means comprising a meter having one side thereof connected in circuit relation with said first pair of diodes and the other side thereof connected in series circuit relation with said one side of said calibration potentiometer, said meter being operable to provide alternately a visual indication of the results of each of the four independent tests performed on a battery with the battery tester as determined by said circuit means.

3,879,655

POLARITY INDICATING BATTERY RECEPTACLE

Mitsuru Saito, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed May 7, 1973, Ser. No. 357,972
Claims priority, application Japan, May 13, 1972, 47-55644
Int. Cl. G01n *27/46*
U.S. Cl. 324—29.5 **8 Claims**

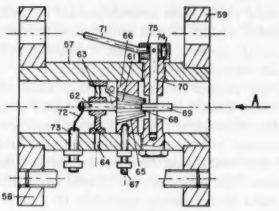


1. A battery energized electrical device comprising a battery receiving receptacle having an access opening and including a separable cover member covering the battery positioned in the receptacle and movable in its covering position between an advanced predetermined closed position and a retracted position, a pair of contact elements, one of said contact elements being mounted inside of said receptacle and the other on said cover member, said pair of contact elements engaging the poles of the battery in said receptacle with said cover member in said covering position, a switch including a pair of electric contact members, means connected to said cover member permitting said contact members to be electrically connected in the retracted position and causing said contact members to be opened in the advanced predetermined closed position, and an indicating means for indicating whether said battery is positioned in the receptacle correctly with regard to its polarity, said indicating means being connected in series with said switch between said contact elements.

3,879,656
ELECTRONIC WATER DETECTOR

Jacques Muller, 127 bis, Ave. du Genl. de Gaulle, 92 La Garenne-Colombes, France

Filed Oct. 23, 1973, Ser. No. 408,437
Claims priority, application France, Oct. 27, 1972, 72.38119
Int. Cl. G01n 27/42
U.S. Cl. 324—30 R 7 Claims

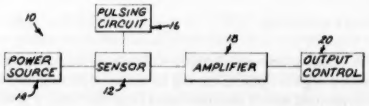


1. A water detecting device comprising a hollow casing, a conductive plug in said casing having a conical bore coaxial with said casing, a conical conductive member of configuration complementary to said bore positioned therein and movable axially thereof, said plug and conical member being electrically insulated from each other, inlet means at one end of said casing for conducting liquid to be analyzed into said casing and between the adjacent surfaces of said conical bore and said conical member, an outlet for the liquid at the other end of said casing and electrical terminals operatively connected respectively to said conical member and to said plug, whereby when a source of potential is connected across said terminals the presence of conducting liquid passing between the adjacent surfaces of said bore and said conical member will be detected.

3,879,657
ELECTRICAL APPARATUS FOR MINIMIZING POLARIZATION OF CONDUCTIVITY CELL ELECTRODES

Marcus I. Nystuen, and Roger A. Johnson, both of St. Paul, Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Continuation of Ser. No. 282,957, Aug. 23, 1972, abandoned.
This application Dec. 21, 1973, Ser. No. 427,082
Int. Cl. G01n 27/42
U.S. Cl. 324—30 R 6 Claims



1. Apparatus for measuring the conductivity of a conductive medium, and for minimizing errors due to polarization, comprising:

a. means for supplying AC electrical power having a frequency of approximately 60 hertz;

b. switching means connected to said AC supply for periodically switching on and off the alternating current, said switching means operatively establishing a ratio of off to on time for said alternating current being switched on for less than one second during any one period;

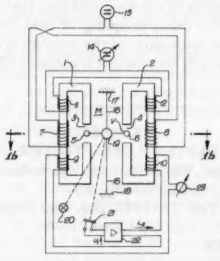
c. means for sensing the conductivity of a medium, including a single conductivity cell having a pair of electrodes operable when energized to develop an output signal indicative of the conductivity of the medium; and

d. means for connecting the output of the switching means to said single conductivity cell whereby AC power of about 60 hertz is intermittently applied according to the switching schedule established by said switching means to the conductivity cell for energization thereof.

3,879,658
APPARATUS FOR MEASURING MAGNETIC SUSCEPTIBILITY

Heinz Hummel, Fasanenweg 14, 6240 Konigstein-Johanniswald, Germany

Filed Sept. 24, 1973, Ser. No. 400,332
Claims priority, application Germany, Sept. 27, 1972, 2247281
Int. Cl. G01r 33/12
U.S. Cl. 324—36 29 Claims



1. In an instrument for measuring magnetic susceptibility and which includes a first and a second magnet circuit respectively with a first and second gap and a first and second test body, respectively located in the first and second gaps, and being interconnected to form a dumbbell configuration which is resiliently suspended but without enveloping current loops, the improvement comprising:

the test bodies disposed in the gaps so that forces acting on them due to the solid material of the test bodies and interaction thereof with the magnetic fields in the gap, have zero resultant; the test bodies differing in interior content, so that the first test body in conjunction with a reference gas, and the second body in conjunction with a test material experiences additional, deflective forces in the gaps which act at different magnitudes on the bodies with a non-zero resultant force for similar magnetic field strength in the gaps;

compensating means including at least one stationary coil disposed for acting on at least one of said magnetic circuits outside of said gaps to provide for at least one magnetic compensating field, effective respectively in at least one of said gaps, for unbalancing the magnetic fields in the gaps for offsetting said non-zero resultant force;

pick-up means responsive to the deflection of the dumbbell configuration in response to said deflective force, to provide for control of said compensating means to obtain said magnetic compensating field; and

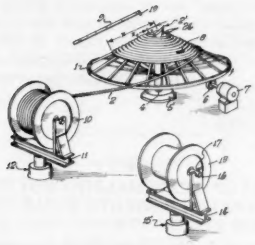
indicating means connected to the pick-up means to provide an indication of the control as provided to the compensating means in representation of the difference in magnetic susceptibility between said test material and said reference gas.

3,879,659

CABLE TESTING APPARATUS WITH CONICAL REEL

William H. Lawson, Jr., 4715 Webb Canyon Rd., Claremont, Calif. 91711

Filed Jan. 2, 1974, Ser. No. 429,497
Int. Cl. G01r 31/08; B65h 75/00
U.S. Cl. 324—52 10 Claims



1. Apparatus for inspecting and testing electrical cable, comprising:

a conical reel of generally frusto-conical shape having a half-angle greater than about 45 degrees and having its axis substantially vertical with its apex portion upward;

means supporting said reel for rotation about its axis;

motor means to rotate said reel, and auxiliary reel means for said cable,

said cable being windable between said auxiliary reel means and said conical reel,

the entire length of said cable being substantially exposed for inspection when wound on said conical reel,

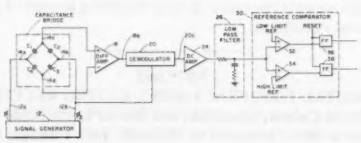
and means to test said cable electrically.

3,879,660

CAPACITIVE MEASURING SYSTEM

John S. Piso, 987 Edgell Rd., Framingham, Mass. 01701

Filed Oct. 24, 1973, Ser. No. 409,092
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 12 Claims



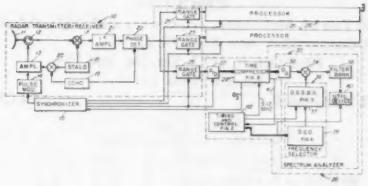
1. In a capacitive bridge measuring system for continuously monitoring the characteristics of a moving length of material, the combination of a sensor head incorporating said capacitive bridge, a source of two electrical signals of a given frequency, equal amplitude and opposite phase connected to opposite inputs of said bridge whereby said bridge is in balance, means for passing said length of material through said sensor head in proximity to two oppositely disposed individual capacitors of said bridge whereby said bridge is unbalanced and an unbalance output signal is produced, means for differentially amplifying said unbalance output signal, a demodulator having two inputs, means for applying one of said two electrical signals from said source to one of the inputs of said demodulator, means connecting said differential amplifying means to the other input of said demodulator whereby said unbalance output signal is demodulated to produce a second output signal proportional to unbalance of said bridge caused by said length of material passing through said sensor head.

3,879,661

SIGNAL PROCESSOR AND SUBASSEMBLIES THEREFOR

John D. Collins, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 229,210, Feb. 1, 1972, abandoned. This application Mar. 30, 1973, Ser. No. 346,389
Int. Cl. G01r 23/16
U.S. Cl. 324—77 B 6 Claims



1. A signal processor wherein successively obtained samples of a signal applied thereto are processed to determine the frequency components thereof, such signal processor comprising:

a. means for successively storing, at a sampling rate R, each one of a set of the most recently obtained samples of the signal, and for retrieving, in order of storage, each one of the stored samples at a rate R', where $R' > R$;

b. a source of a binary control signal;

c. means for generating a heterodyning signal the frequency of such signal being in accordance with the binary control signal;

d. means for heterodyning each of the retrieved samples with the heterodyning signal to produce a heterodyned signal having frequency components corresponding to frequency components of the samples; and,

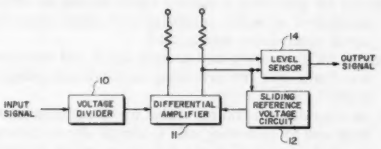
e. filter bank means, coupled to the heterodyning means, for separating the frequency components of the heterodyned signal.

3,879,662

DIFFERENTIAL AMPLIFIER SLIDING REFERENCE

Charles A. Barneck, Bountiful, Utah, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 18, 1974, Ser. No. 480,450
Int. Cl. G01r 17/02; H03k 5/20
U.S. Cl. 324—98 9 Claims



1. A tolerance detector for indicating whether the voltage level of an input signal to be monitored lies within presettable upper and lower limits comprising a differential amplifier responding to said input signal and to a reference voltage and having a pair of output circuits, a voltage level sensing means having an input circuit coupled to said differential amplifier output circuits and having mutually exclusive high and low output voltage states, adjustable sliding reference voltage circuit means in circuit with said reference voltage input to the differential amplifier for clamping said reference voltage level to one of said presettable upper and lower limits only when the level of said input signal exceeds the corresponding upper or lower limit, one of said two differential amplifier output volt-

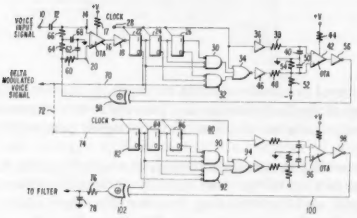
ages exceeding a predetermined magnitude only during said clamping, said level sensing means attaining the low level output state in response to a differential amplifier output voltage exceeding said predetermined magnitude and attaining the high level output state during absence of said clamping.

3,879,663

DELTA MODULATOR UTILIZING A DUTY CYCLE CIRCUIT

Ellwood Patrick McGrogan, Jr., Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,799
Int. Cl. H03k *13/22*
U.S. Cl. 325—38 B **14 Claims**



1. A delta modulation system for translating an analog input signal into an encoded digital signal and for decoding said encoded digital signal into an analog output signal, said system comprising:

an encoder station comprising:

a. a signal comparator means for periodically comparing the amplitudes of said analog input signal and a feedback signal applied respectively to first and second input terminals thereof and for providing a comparator output signal having a first or a second voltage level at an output terminal thereof for each of said periodic comparisons;

b. an encoder pulse train generating means responsive to said comparator output signal for providing a pulse train having a duty cycle dependent upon the results of said periodic comparisons, the duty cycle of said pulse train corresponding to the slope of said analog input signal, said encoder pulse train generating means comprising:

means for generating a sawtooth waveform;

means for providing a second signal having an amplitude dependent upon the results of said comparisons in said signal comparator means; and

means for comparing said second signal and said sawtooth waveform and for providing said corresponding pulse train;

c. an encoder integrating means for integrating said pulse train and for providing said feedback signal, corresponding to the integral of said pulse train, at the second input terminal of said comparator means;

d. means associated with said encoder pulse train generating means for providing said encoded digital output signal to a transmission medium; and

a decoder station comprising:

a. means for receiving said encoded digital signal from said transmission medium;

b. a decoder pulse train generating means responsive to said encoded digital signal for providing a decoder pulse train having a duty cycle depending upon the encoded information in said encoded digital signal; and

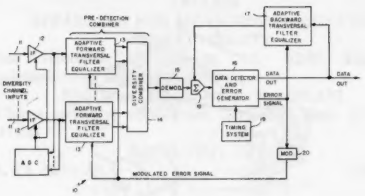
c. decoder integrating means for integrating said decoder pulse train and for providing said analog output signal corresponding to said analog input signal.

3,879,664

HIGH SPEED DIGITAL COMMUNICATION RECEIVER

Peter Monsen, Stow, Mass., assignor to Signatron, Inc., Lexington, Mass.

Filed May 7, 1973, Ser. No. 357,675
Int. Cl. H04b *1/16*
U.S. Cl. 325—303 **23 Claims**



1. A receiver for processing signals transmitted through a dispersive medium from a transmitter and received in a plurality of diversity channels, said receiver comprising

a forward transversal filter equalizer in each of said channels for processing said received signals to produce a combined weighted output signal prior to demodulation, each of said forward filter equalizers including

at least one or more weighting sections spaced at not more than the data symbol interval for producing a plurality of weighted signals;

a plurality of weighting means, one for each of said weighting sections, for controlling the weight of the signals processed at each of said weighting sections;

means for combining the weighted signals from each of said weighting sections of all of said forward equalizers to produce a combined weighted output signal;

means for demodulating said combined weighted output signal to produce a demodulated weighted output signal;

means for quantizing said demodulated weighted output signal to produce a quantized data output signal;

means responsive to said quantized data output signal for deriving an unmodulated error signal;

means for modulating said error signal; and

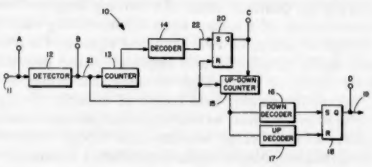
means for processing said modulated error signal and said received signals to produce control signals for controlling the weights operative at each weighting section of each of said equalizers.

3,879,665

DIGITAL FREQUENCY-SHIFT KEYING RECEIVER

Earl Fred Carlow, Scottsdale, and Harold Garth Nash, Tempe, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed June 28, 1973, Ser. No. 374,594
Int. Cl. H04l *27/14*
U.S. Cl. 325—320 **6 Claims**



1. A digital frequency-shift keying (FSK) receiver including shaping means for receiving an input periodic oscillation signal of a first frequency, designated a binary 1 and of a second frequency, designated a binary 0, comprising:

a. threshold detector means connected to the shaping means for producing a plurality of unidirectional pulse

position signals whenever a positive going or a negative going portion of the periodic oscillation signal passes through a prescribed potential;

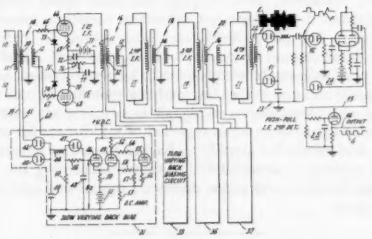
b. timing means connected to said threshold detector means for measuring the time between the pulses produced by the detector means to provide indicia signals representative of whether the input signals are of the 1 or 0 frequency; and

c. output means connected to said timing means and responsive to the indicia signals for providing on a single output line an output pulse of one polarity if the input signal is at the binary 1 frequency and an output pulse of the opposite polarity if the input signal is at the binary 0 frequency.

3,879,666
CIRCUIT FOR ANTI-JAM RECEIVER OF WIDE DYNAMIC RANGE UTILIZING INSTANTANEOUS AUTOMATIC GAIN CONTROL ACTION FOR CLOSELY PACKED PULSES

Joseph F. Marshall, Woburn, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 15, 1963, Ser. No. 258,929
Int. Cl. H04b *15/00*
U.S. Cl. 325—404 **8 Claims**



1. A circuit producing instantaneous automatic gain control of the intermediate frequency stages for an anti-jam, wide dynamic range receiver comprising:

a plurality of intermediate frequency amplifier stages coupled in sequence by coupling transformers, each transformer having a primary output from the preceding stage and a center tapped secondary with the leads thereof coupled to the grids of amplifier tubes in the succeeding stage;

a sampling secondary winding in flux relation with said primary;

a slow varying back biasing circuit coupled to said sampling secondary winding and having an output coupled to said secondary center tap for back biasing the grids of said amplifier tubes;

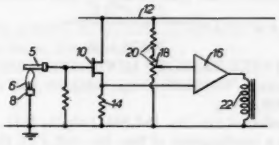
a voltage amplitude clipping means coupled to said tube grids; and

a threshold biasing voltage coupled to said voltage amplitude clipping means to establish the clipping voltage level on said tube grids whereby the intermediate frequency amplifier tubes are back biased automatically for slowly varying continuous wave signals and instantaneously for rapid, high amplitude jam signals.

3,879,667
APPARATUS AND METHODS FOR DETECTING PHYSICAL PARAMETERS

Nigel P. Kraty, Maidenhead, and Robert E. Turner, Henfield, both of England, assignors to Graviner (Colnbrook) Limited, London, England

Filed Dec. 16, 1971, Ser. No. 208,766
Claims priority, application United Kingdom, Dec. 18, 1970, 60164/70
Int. Cl. H03k *17/00*
U.S. Cl. 328—6 **15 Claims**



1. In a method of detecting a physical parameter by sensing for an electrical potential generated in dependence thereon, the steps of

selecting two electrode materials such that over each of the materials a predetermined gas has a different equilibrium partial pressure when the materials are at the same temperature,

mounting two electrodes closely adjacent but separated from each other, the electrodes being respectively made of the two selected materials,

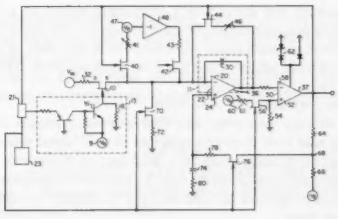
establishing an electrolyte between the electrodes and holding different gaseous partial pressures at the two electrodes, and

sensing a self-generated electrical potential difference appearing between the electrodes in dependence on said parameter.

3,879,668
CONVERTER CIRCUIT

Allen Ponsford Edwards, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 6, 1973, Ser. No. 422,498
Int. Cl. G06g *7/24*
U.S. Cl. 328—145 **3 Claims**



1. A converter circuit for producing a signal which is proportional to the logarithm of an input signal, the circuit comprising:

integrating means having an input and an output and including reactive impedance and being operable to integrate a signal applied thereto;

first switching means connected to the input of said integrating means for applying an input signal thereto for the duration of an input period;

circuit means including a discharge circuit and a second switching means connecting said discharge circuit to said reactive impedance of the integrating means for providing an exponentially-decaying signal at the output of the integrating means during a conversion period following the input period during which the second switching means is closed;

comparator means including a source of reference signal and having an input connected to the output of the integrator for producing a signal at the output thereof to indicate the end of the conversion period in response to the exponentially-decaying signal applied to the input thereof from the output of said integrator means attaining a predetermined relationship to said reference signal.

3,879,669

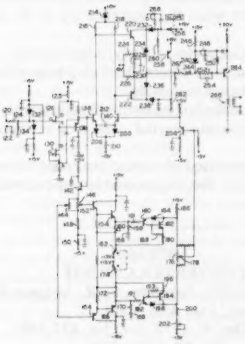
ADJUSTABLE TRIGGER LEVEL CONTROL CIRCUIT

Hiro Moriyasu, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 164,904, July 21, 1971, abandoned, which is a continuation of Ser. No. 868,273, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 535,382, March 17, 1966, abandoned. This application Dec. 10, 1973, Ser. No. 423,380

Int. Cl. H03k *5/18, 5/153, 3/02*

U.S. Cl. 328—146 **17 Claims**



1. A circuit for providing a triggering signal at a voltage level which is a selectable fixed fraction of the peak-to-peak voltage level of each input waveform of a plurality of successive waveforms which may vary in peak-to-peak amplitude and D.C. level, comprising:

a signal path for said waveform,

a first storage capacitor and first transistor means for coupling said first storage capacitor to said input signal path, a second storage capacitor and second transistor means of opposite conductivity type to said first transistor means for coupling said second storage capacitor to said input signal path,

a continuously adjustable resistance means which provides at an adjustable tap a selectable output voltage between two voltages applied to two fixed terminals of said resistance means,

means coupling one fixed terminal of said resistance means, to one of said storage capacitors and the other fixed terminal to the other of said storage capacitors,

said first and second storage capacitors acting to store peak voltage levels of the input waveforms and the adjustable tap selecting an output voltage between said peak voltage levels thereof,

a differential amplifier comprising first and second amplifying devices whose current carrying terminals are coupled together to establish differential action therebetween,

means connecting the control terminal of one of said amplifier devices to said input signal path, and

means coupling the adjustable tap of said resistance means to the control terminal of the other amplifier device for determining the output producing voltage of said differential amplifier in correspondence with the setting of said adjustable tap of said resistance means.

3,879,670

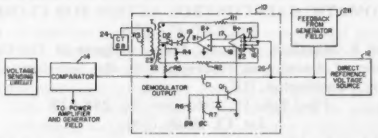
SYNCHRONOUS DEMODULATOR CIRCUIT

David A. Fox, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 11, 1974, Ser. No. 460,252

Int. Cl. H03d *3/18*

U.S. Cl. 329—50 **6 Claims**



1. A synchronous demodulator comprising: a first terminal for receiving a first time varying electrical signal whose waveform is subject to variation, a second terminal for receiving a second, reference, time varying electrical signal having a predetermined waveform not subject to variation; means for developing two phase displaced signals having 0° and 180° phase displacement respectively from said first signal and equal peak magnitude with respect to a common point; means for amplifying; and means for applying switched signals comprising said phase displaced signals in synchronism with said reference signal to an input terminal of said means for amplifying; said means for amplifying having an output terminal at which appears a demodulated output representing the relationship between said phase displaced signals and said reference signal.

3,879,671

SYSTEM FOR DETECTING A DIGITAL PHASE-MODULATED WAVE

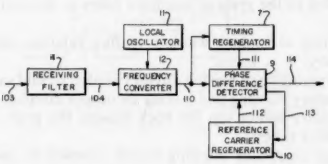
Hidetaka Yanagidaira, Ohmiya; Kazuo Kawai, Yokohama; Sotokichi Shintani, and Katsuhiko Furuya, both of Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1973, Ser. No. 409,804

Claims priority, application Japan, Oct. 30, 1972, 47-10787

Int. Cl. H03d *3/04*

U.S. Cl. 329—128 **5 Claims**



1. A system for detecting the phase of a constant phase signal element of a phase-modulated carrier wave comprising: input means for receiving the phase-modulated carrier wave; first means connected to said input means for generating a

control pulse during a stable portion stable in phase of each signal element of said phase-modulated wave;

second means for generating clock pulses having a repetition frequency sufficiently higher than the frequency of the carrier of said phase-modulated wave;

third means for generating a reference carrier wave;

fourth means operatively coupled to said input means, said first means, said second means and said third means for developing in response to said control pulse, said phase-modulated wave and said reference carrier wave a counting control signal for determining a counting period corresponding to a period between a zero crossing of the phase-modulated wave and a zero crossing of the reference carrier immediately succeeding the first mentioned zero crossing; and

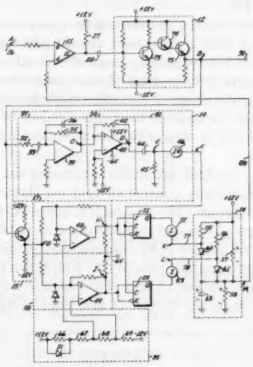
fifth means connected to said second means and said fourth means and receptive of said clock pulses and siad counting control signal for counting said clock pulses only during said counting period to determine the relative phase of said reference carrier wave relative to the phase of each signal element of a phase-modulated wave and for developing digital output signals representative of said relative phase.

3,879,672

DIGITAL AUTOMATIC GAIN CONTROL CIRCUIT

Eddy J. Milanes, Oklahoma City, Okla., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Sept. 4, 1973, Ser. No. 394,015
Int. Cl. H03b *3/02;* **H03g** *3/30*
U.S. Cl. 330—29 **6 Claims**



1. A digital automatic gain control circuit for use with a source of signals, said circuit comprising:

a variable gain amplifier having first and second input leads and an output lead, the gain of said amplifier being determined by the amplitude of voltage applied to said second input lead, said first input lead of said amplifier being coupled to said source of signals;

a peak detector having an input lead and an output lead, said input lead of said peak detector being coupled to said output lead of said amplifier;

a first threshold detector having an input lead and an output lead, said input lead of said first threshold detector being coupled to said output lead of said amplifier, the amplitude of voltage from said threshold detector being determined by the amplitude of a signal from said amplifier;

a first flip-flop having first, second and third input leads and an output lead, said first and said third input leads of said first flip-flop being connected to said output lead of said first threshold detector, said second input lead of said first flip-flop being connected to said output lead of said peak detector, the voltage from said output lead of said flip-flop being determined by the amplitude of voltage applied to said first and said third input leads of said first flip-flop; and

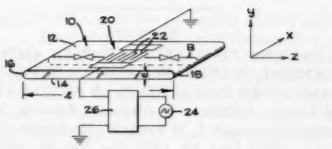
a summing circuit, said summing circuit being connected between said output lead of said first flip-flop and said second input lead of said amplifier, the voltage which said summing circuit provides to said second input lead of said amplifier being determined by the value of voltage from the output lead of said flip-flop.

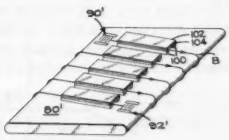
3,879,673

CIRCULATING ACOUSTIC SURFACE WAVE

Herbert John Shaw, Stanford, Calif.

Filed Mar. 10, 1971, Ser. No. 122,734
Int. Cl. H03f *3/04;* **H03h** *9/30*
U.S. Cl. 330—5.5 **15 Claims**





1. A circulating acoustic surface wave device which comprises,

an anisotropic elastic medium formed to enable propagation of an acoustic surface wave around its peripheral surface, and

means for establishing an acoustic surface wave on said elastic medium so as to propagate therearound.

3,879,674

AUTOMATIC GAIN CONTROL CIRCUIT

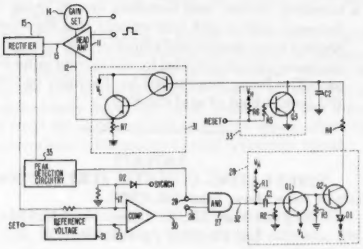
Thomas J. Dragon, Southfield, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 27, 1973, Ser. No. 428,838
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **8 Claims**

6. A method of automatic gain control for setting the gain of a read amplifier to produce a desired output level in response to each of a series of preamble signal trains having variable levels comprising the steps of:

initially fixing the gain of said amplifier such that the initial level of each said preamble signal train at the output of said amplifier is always greater than said desired output level;

developing an analog pulse train representative of the output level of said preamble signal train; and



decrementing the gain of said amplifier in response to each excess of an analog pulse over said desired level.

3,879,675

COMPENSATING CIRCUIT FOR AN AMPLIFIER ELEMENT, PREFERABLY FOR AN OPERATIONAL AMPLIFIER INCLUDED IN AN ACTIVE FILTER

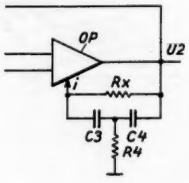
Bengt Gustav Löfmark, Skarholmen, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Sept. 15, 1972, Ser. No. 289,294

Claims priority, application Sweden, Dec. 30, 1971, 12378/71

Int. Cl. H03f *3/52*

U.S. Cl. 330—109 **3 Claims**



1. An active filter having high amplification at a given pole frequency comprising: a frequency selective passive RC-filter network for determining the center frequency of the filter, said frequency selective RC-filter network having input terminals for receiving an input signal and a feedback signal and output terminals for transmitting a filtered signal; an operational amplifier having input terminals connected to the output terminals of said RC-filter network, an internal compensating input terminal, and an output terminal; feedback means connecting the output terminal of said operational amplifier to at least an input terminal of said passive RC-filter network for feeding back the signal at the output terminal of said operational amplifier to input terminals of said operational amplifier; and a passive compensating network connected between the output terminal of said operational amplifier and the compensating input terminal of said operational amplifier, said passive compensating network comprising at least one shunted T-link and having a transconductance with a conjugate complex zero, the components of said passive network being dimensioned so that the frequency corresponding to said conjugate complex zero is substantially equal to or greater than said pole frequency.

3,879,676

PULSE TRAIN FILTER CIRCUIT PARTICULARLY FOR AUTOMOTIVE TACHOGENERATORS

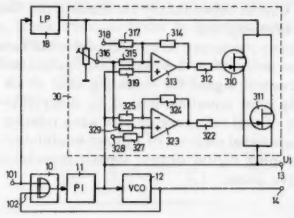
Alfred Schulz, Braunschweig, and Günther Hönig, Markgroningen, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed July 18, 1973, Ser. No. 380,368

Claims priority, application Germany, Aug. 3, 1972, 2238241

Int. Cl. H03b *3/04*

U.S. Cl. 331—10 **18 Claims**



1. A pulse train filter circuit for a pulse train of varying frequency comprising:

a phase comparison circuit (**10**) having a first input for receiving an input pulse train and a second input (**102**) for receiving an output pulse train;

a pulse train generating oscillator (**12**) of voltage controlled frequency for supplying an output pulse train to an output circuit and to said second input (**102**) of said comparison circuit (**10**);

a regulating circuit (**11**) having its input connected to the output of said comparison circuit (**10**) and its output connected for frequency control of said oscillator (**12**), for converting the output of said comparison circuit (**10**) to a control voltage of suitable characteristics and magnitude range for causing the output pulses of said oscillator (**12**) to keep in step with pulses of said input pulse train, and

an auxiliary control circuit for increasing the capture range of the frequency control of said oscillator, containing a low-pass circuit (**18**) to which is supplied the same input frequency (f_1) as said comparison circuit (**10**), said auxiliary control circuit (**18**) continuously furnishing a control voltage of constant polarity to which the frequency control of said output (**12**) is responsive in addition to being responsive to the output of said regulating circuit (**11**).

3,879,677

TUNED OSCILLATOR CIRCUIT HAVING A TUNED FILTER OUTPUT

Charles A. Arnold, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed July 20, 1973, Ser. No. 381,128

Int. Cl. H03b *5/36*

U.S. Cl. 331—77 **10 Claims**

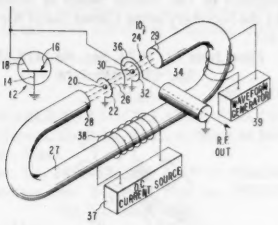
1. An oscillator circuit comprising:

means for providing at least one magnetic field of a predetermmined strength:

a ferrimagnetic resonator device positioned within said magnetic field, and exhibiting a gyromagnetic resonance frequency in response to the strength of said magnetic field;

an electronic amplifier means having a power input terminal for connection to an external power source, and having a signal input terminal separate from said power input terminal for connection to a signal source, said amplifier means being adapted to cause said signal input to control power from said source; means connected to signal input

terminal for deriving an input signal from said ferrimagnetic device; and



at least one frequency responsive ferrimagnetic output device positioned within the at least one magnetic field and in electrical communication with the amplifying means for passing the said gyromagnetic resonance frequency and for rejecting off frequencies.

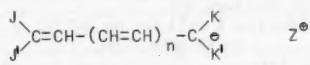
3,879,678

OXONOL DYE LASERS

William C. McColgin, and Frank G. Webster, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 14, 1972, Ser. No. 226,228
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 L **8 Claims**

1. A dye laser comprising a laser dye solution, a pumping energy source operably coupled therewith for producing a population inversion in said solution and a means optically coupled to the population inverted solution to stimulate therein coherent laser emission, said dye solution comprising a lasing concentration in a non-interfering solvent of a dye having a formula as follows:

I. 

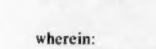
wherein:

n represents a positive integer having a value of 1 to 3;

Z^+ represents a hydrogen or a cation;

J, J′, K and K′, when taken alone, each represents a member selected from the group consisting of a cyano radical, an alkoxycarbonyl radical, an acyl radical, and an alkyl substituted, aryl substituted or aryloxy substituted sulfonyl radical, with the proviso that only one of J and J′ and one of K and K′ can be a cyano radical, and,

J and J′, when taken together and with the carbon atoms to which they are attached, and K and K′, when taken together and with the carbon atom to which they are attached, represent, respectively, the radicals:

II.  and III.

wherein:

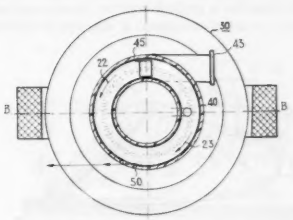
Q and Q′ represent the nometallic atoms necessary to complete a nucleus selected from the group consisting of an isoxazolinone nucleus, an oxindole nucleus, a 2,4,6-triketohexahydropyrimidine nucleus, a 2(3H)-imidazopyridone nucleus, a 5,7-dioxo-6,7-dihydro-5-thiazolopyrimidine nucleus, a thianaphthenone nucleus, a 2H-pyran-2-one nucleus, a 4-thiazolinone nucleus, a 2-imino-2-oxazolin-4-one, a cyclic dione nucleus or a cyclic tetrone nucleus.

3,879,679

COMPTON EFFECT LASERS

Georges Mourier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 15, 1973, Ser. No. 360,416
Claims priority, application France, May 19, 1972, 72.18034
Int. Cl. H01s *3/10, 3/08*
U.S. Cl. 331—94.5 N **6 Claims**



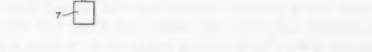
1. A Compton-effect laser for generating photon radiation of frequency ν_2 from photon radiation of frequency ν_1 comprising, an evacuated chamber including a resonant cavity; means for producing a high energy electron beam having an orbit wholly contained within said cavity; means for inserting photon radiation of frequency ν_1 into said cavity for interaction with said high energy electron beam for producing photon radiation of frequency ν_2 and means for extracting said photon radiation of frequency ν_2 from said cavity.

3,879,680

DEVICE FOR REMOVING AND DECONTAMINATING CHEMICAL LASER GASEOUS EFFLUENT

Robert Naismith, Fairfax, and Robert Stephen Scheffee, Lorton, both of Va., assignors to Atlantic Research Corporation, Fairfax, Va.

Filed Feb. 20, 1973, Ser. No. 333,581
Int. Cl. H01s *3/00*; **B01j** *1/00, 7/00*
U.S. Cl. 331—94.5 G **12 Claims**



1. A device for removing low-pressure effluent gases containing hydrogen fluoride or deuterium fluoride from a chemical laser system and for eliminating from the so-removed gases said hydrogen fluoride or deuterium fluoride, comprising:

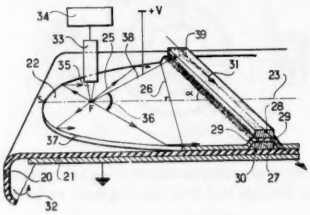
a. a gas generator having a combustion chamber, a gas-generating composition seated in said combustion chamber capable of producing high temperature, gaseous combustion products including gaseous alkali metal hydroxide, gaseous alkali metal, or mixtures thereof, and a restricted nozzle for venting at high velocity said combustion products, and

b. a chamber connected to said gas generator and adapted to receive the high-velocity combustion gas stream venting from said restricted nozzle, said chamber having inlet means connected to the cavity of a low-pressure hydrogen fluoride- or deuterium fluoride-producing chemical laser as its source of the low-pressure effluent gases, and having exit means for the products resulting from the admixture within said chamber of said combustion product gas stream and said low-pressure effluent gases.

3,879,681
GAS LASER

Bruno Godard, Gif sur Yvette; Bernard Laxour, Palaiseau, and Maurice Michon, Draveil, all of France, assignors to Compagnie General d'Electricite, Paris, France

Filed Nov. 19, 1973, Ser. No. 417,324
Claims priority, application France, Nov. 17, 1972, 72.40939
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 PE 6 Claims



1. A traveling wave transmission line system for excitation of a laser having an active laser medium, comprising:

a flat electric line comprising a first metal plate (**22, 23, 257, 2585, 305, 3065**) and a second metal plate (**21, 259, 2605, 302**) which are parallel and separated from each other by an insulating layer (**20, 250, 300**), at least said first metal plate being provided with a rectilinear slot (**30, 253, 303**) separating it into a first part (**22, 257, 305**) and a second part (**23, 2585, 3065**), said first part being formed as a parabola with an axis of symmetry at an angle to the longitudinal axis of said channel,

a voltage generator (**1000**) producing different voltages on said plates,

excitation means (**33, 34**) for producing at the focus of said parabola a rapid electric discharge between the first part of said first plate and said second plate so as to produce in this line a progressive and plane electric discharge wave encountering said slot,

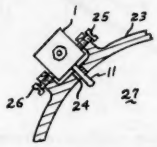
means for containing an active gaseous medium in said slot; and characterized in that a plurality of small metal plates (**258, 2582, 2583, 2584, 3061, 3062, 3063, 3064**) are disposed between said second plate **2605, 302**) and said second part (**2585, 3065**) of the first plate these small plates being parallel to said first and second plates and separated one from the other and from said first and second plates by insulating layers so as to form a stack, the height of which is substantially coextensive with the thickness of said first part (**257, 305**) of the first plate, said second part of said first plate constituting a first small plate of this stack, said small plates and the insulating layers situated between these small plates being confined to one side of said slot (**253, 303**) so that they do not reach said first part of the first plate on the other side of said slot, said slot extending substantially over the height of said stack,

said voltage generator (**1000**) producing a first voltage on said first small plate (**2585, 3065**), a second voltage on said second small plate (**2584, 3064**), said first voltage on the third of said plates (**2583, 3063**) and so on, said first and second voltages being produced on the plates in the odd rows and even rows respectively, this first and second voltage being selected in such a way that when said discharge wave reaches said slot (**253, 303**), a discharge is produced across this slot between said first part of the first plate (**257, 305**) and said small plates in the odd rows (**2585, 3065, 2583, 2581, 3063, 3061**).

3,879,682
ELECTRONIC TUNING SYSTEM FOR HIGH POWER CAVITY OSCILLATORS

Earl E. Swartz, and Domenick P. Viterisi, both of Ft. Wayne, Ind., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed June 12, 1974, Ser. No. 478,552
Int. Cl. H03b *5/18*
U.S. Cl. 331—96 3 Claims



1. The improvement in a cavity of a resonant cylindrical cavity oscillator circuit, the said cavity having a longitudinal axis and a closed end, to provide an electrically controlled high speed shift in the resonant frequency of the resonant cavity, the said improvement comprising:

a. a longitudinal slot in the wall of the said cylindrical cavity;

b. an inductive loop extending through the said slot into the said cavity;

c. a PIN diode connected to one end of the said inductive loop;

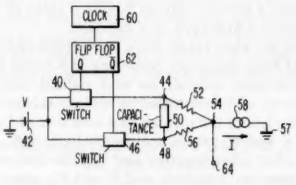
d. a feed through filter connected to the other end of the said inductive loop; and

e. means including a source of direct current voltage for selectively either forwardly or reverse biasing the said PIN diode.

3,879,683
SAWTOOTH WAVEFORM GENERATOR

Robert Jan Bosselaers, Winchester, Mass., assignor to RCA Corporation, New York, N.Y.

Filed June 6, 1973, Ser. No. 367,542
Int. Cl. H03k *3/282*
U.S. Cl. 331—111 8 Claims



1. In combination:

first, second and third terminals,

circuit means including a reactance having a given value connected directly between said first and second terminals, a first resistance having a given value connected directly between said first and third terminals, and a second resistance having a given value connected directly between said second and third terminals, and

cyclically controlled energizing means having a given cycle frequency coupled to said first, second and third terminals for applying an energization signal in a given direction to said reactance during each odd cycle of said energization signal and for applying said energization signal to said reactance during each even cycle of said energization signal in a reverse direction with respect to said given direction to thereby produce a sawtooth waveform solely at one of said first and second terminals solely during said

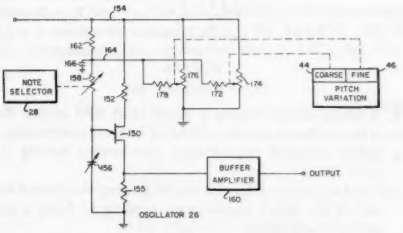
odd cycle when said energization signal is applied in said given direction and a sawtooth waveform solely at the other of said first and second terminals solely during said even cycle when said energization signal is applied in said reverse direction,

said circuit means interdigitizing said waveforms whereby a continuous sawtooth waveform is produced for each said cycle.

3,879,684
TUNEABLE UJT OSCILLATOR CIRCUIT

Albert E. Sanderson, Carlisle, Mass., assignor to Inventronics, Inc., Carlisle, Mass.

Division of Ser. No. 249,942, May 3, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 399,921
Int. Cl. H03k *3/28*
U.S. Cl. 331—111 **7 Claims**



1. A variable frequency oscillator circuit comprising:

A. a relaxation oscillator including

i. a timing circuit including a charge storage unit and an input terminal for transmitting a timing signal, and

ii. a discharge circuit connected to said timing circuit to receive the timing signal, said discharge circuit transmitting an output signal at a frequency nominally determined by the timing signal from said timing circuit, and including means for comparing the timing signal and a reference signal,

B. a normally constant voltage source connected for energizing said discharge circuit to establish the reference signal,

C. means connecting said normally constant voltage source to said timing circuit input terminal for providing a voltage thereto, and

D. a variable voltage source connected to said timing circuit input terminal for transmitting a variable voltage thereto whereby said variable voltage source can offset the oscillator frequency from the nominal frequency determined by said timing circuit and said normally constant voltage source.

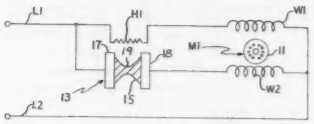
3,879,685
MOTOR STARTING SYSTEM INCLUDING THERMAL RESPONSIVE MEANS FOR SELECTIVELY DISRUPTING THE POWER BEING SUPPLIED TO THE START WINDING

Henry David Epstein, Cambridge, and William A. Broadley, East Walpole, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 675,891, Oct. 17, 1967. This application Nov. 13, 1969, Ser. No. 871,630
Int. Cl. H02p *1/44*
U.S. Cl. 318—221 H **1 Claim**

1. A motor starting system for use with an electric motor having a main winding and a starting winding, said system comprising:

a capacitor connected in series with said starting winding for shifting the phase of current applied thereto, a mass of material which has a resistance characteristic having a positive temperature coefficient and a sharply defined transition temperature above which the resistance of said material increases sharply, said mass being serially connected to said starting winding and to said capacitor and having a preselected nominal resistance when heated to establish a reduced flow of current to said starting winding in order to provide a torque contribution during continuous running of the motor while permitting operation of said capacitor at a reduced voltage level, said mass being arranged in a preselected physical configuration including a neck portion having a substantially reduced thickness to provide a concentrated area of heating and



a relatively large value of resistance at the transition temperature;

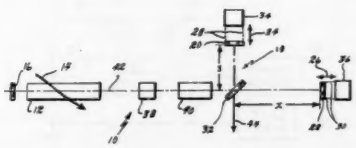
first circuit means for connecting said main winding across a source of electric power;

second circuit means for connecting said starting winding, said capacitor, and said mass of material in series across said source in a manner so that both of said windings are initially energized and said mass of material including said neck portion is heated by the current flowing therethrough to reach the transition temperature after a preselected interval in order to substantially reduce the energization of said starting winding; and including heat sink means for cooling said mass of material upon deenergization of said motor.

3,879,686
LASER SYSTEM FOR PRODUCING VARIABLE DURATION SHORT PULSES

David Milam, Lexington; Howard Schlossberg, Burlington, both of Mass., and Abraham Szoke, Kfar Shmaryahu, Israel, assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Sept. 20, 1973, Ser. No. 399,010
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 M **6 Claims**

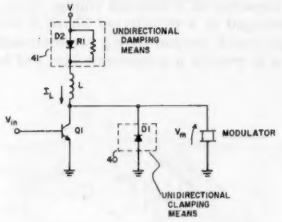


1. A laser system for producing intense variable duration short pulses comprising a lser source, a substantially totally reflective surface located adjacent one end of said laser source and in nominal optical alignment therewith, a Michelson interferometer located adjacent the other end of said laser source and in optical alignment with said mirror and means in nominal optical alignment with an interposed between said laser source and said interferometer for altering the input from said laser source to said interferometer so that the output from said interferometer is in the form of a short laser pulse.

3,879,687
HIGH SPEED LIGHT BEAM MODULATOR

O. Theodore Daehlin, Hopkins; William W. Standke, Minnetonka, and Wayne L. Walters, Bloomington, all of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Feb. 26, 1973, Ser. No. 335,988
Int. Cl. H01s 3/12
U.S. Cl. 332—7.51 7 Claims

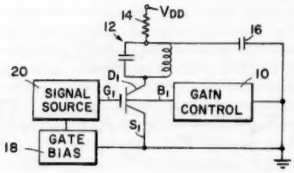


1. A high speed light beam modulator comprising:
an electro-optic modulator having capacitive characteristics,
inductor means connected to the electro-optic modulator to form a series resonant circuit with the capacitance of the electro-optic modulator,
circuit means for connecting the inductor means and the electro-optic modulator to a suitable source of electrical energy,
switching means in the circuit means for selectively allowing current to flow in the inductor means for a predetermined period, and then interrupting the flow of current to cause oscillations in the series resonant circuit, and
damping means for damping oscillations in the series resonant circuit after the first half cycle of voltage oscillation appearing across the electro-optic modulator.

3,879,688
METHOD FOR GAIN CONTROL OF FIELD-EFFECT TRANSISTOR

Yutaka Hayashi, 9-14, 4-chome, Hon-machi, Hoya, and Yasuo Tarui, 6-4, 5-chrome, Minamisawa, Kurume-machi, Kitatama, Tokyo, both of Japan

Division of Ser. No. 264,965, June 21, 1972, and a continuation-in-part of Ser. No. 24,166, March 21, 1970. This application Nov. 13, 1973, Ser. No. 415,345
Int. Cl. H03c 1/36
U.S. Cl. 332—31 T 9 Claims

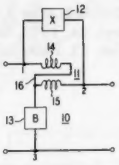


1. A method for controlling the gain of a field-effect transistor of the type having a base, a source, a drain, and a gate which is receptive of an input signal during use and capable of operating as a bipolar transistor when said source, base and drain are respectively used as an emitter, base and collector, said method comprising the steps of: applying a constant voltage to said gate to bias same for an operable range of input signals; applying a voltage to said drain having an operable range within the pinch-off voltage characteristics of said field-effect transistor to bias said drain; applying a forward bias voltage to said base with respect to said source; and varying the base-to-source current to effect control of the gain of said field-effect transistor and to effect a constant gate threshold voltage.

3,879,689
MATCHED PHASE SHIFTER

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 21, 1974, Ser. No. 481,891
Int. Cl. H03h 7/32, 7/38
U.S. Cl. 333—29 3 Claims

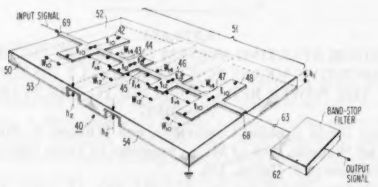


1. A phase shifter having a phase shift $\phi=2$ arctan $X/2Z_o$ over a prescribed frequency band of interest comprising:
a tightly coupled two-winding transformer having a 1:1 turns ratio;
one end of one transformer winding being connected to one end of the other transformer winding to form a series-aiding connection;
a first reactive network having a reactance X being connected between the other ends of said series-connected transformer windings thereby forming at one connection a first common junction and at the other connection a second common junction;
and a second reactive network, having a susceptance B such that $X/Z_o=BZ_o$, being connected between said one ends of said transformer windings and a third common junction;
said first and said third common junctions constituting a first port of said phase shifter;
said second and said third common junctions constituting a second port of said phase shifter.

3,879,690
DISTRIBUTED TRANSMISSION LINE FILTER

Benjamin Golant, Maple Shade, and Norman Richard Landry, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 6, 1974, Ser. No. 467,137
Int. Cl. H01p 1/20, 3/08
U.S. Cl. 333—73 S 7 Claims



1. Filter apparatus having a plurality of inductive and capacitive sections arranged to provide predetermined frequency pass-bands and stop-bands in response to an input signal, comprising:
an electromagnetic transmission line having a ground conductor on one surface of a dielectric substrate and a center conductor on a dielectric substrate surface oppo-

site said one surface, said center conductor having a plurality of serially connected sections dimensioned to approximate said arrangement of said inductive and capacitive sections for providing said frequency pass-bands and stop-bands in response to said input signal;

means for providing a first spacing between said center conductor inductive sections and said ground conductor; and

means for providing a second spacing between at least one of said center conductor capacitive sections and said ground conductor to prevent said one center conductor capacitive section being resonant in said frequency stop-band.

3,879,691

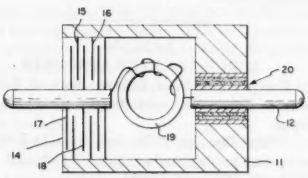
PLUGGABLE FILTER UNIT

William Baird Fritz, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 266,868, June 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 166,899, July 28, 1971, abandoned. This application Oct. 3, 1973, Ser. No. 402,938

Int. Cl. H01h *7/14*

U.S. Cl. 333—79 **17 Claims**



1. A pluggable filter unit comprising:

an electrically conductive case having plural outer walls,

at least one capacitor within said case and having one side electrically connected to said case,

at least one inductor within said case and electrically connected to the other side of said capacitor, said at least one capacitor and at least one inductor being connected to form one of an L-type, T-type and Pi-type filter,

a first conductive pin in one of said outer walls of said case and an electrical terminal at the other end region of said case, and,

lossy filter means in said one of said outer walls of said case, said pin extending through said lossy filter means and being in electrical contact with an inner conductive surface of said filter means, an outer conductive surface of said filter means being in electrical contract with said case, with said inductor, said capacitor and said lossy filter means being connected as a high frequency insertion loss filter network between said pin and said terminal.

3,879,692

AVIONICS CHANNEL SELECTION APPARATUS

William L. Wisser, Line Lexington; Louis C. Ammlung, Hatboro, and Howard M. Schenkel, Ambler, all of Pa., assignors to Narco Scientific Industries, Inc., Ft. Washington, Pa.

Filed Aug. 12, 1974, Ser. No. 496,612

Int. Cl. H03j *1/02*

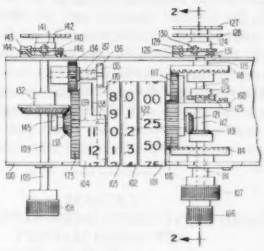
U.S. Cl. 334—86 **9 Claims**

1. A channel selection device for avionics transmitters and receivers comprising:

first and second frequency display means, said first means being graduated in units and said second means being graduated in fractional parts of said unit;

first and second actuating shaft means corresponding respectively to said first and second display means, said shaft means being at least partially coaxial with one another and terminating respectively in colinear operating knobs substantially adjacent to one another;

first gear means, coupling said first shaft means with said first display means, for incrementing said first display means a unit at a time in response to a predetermined degree of rotation of said first shaft means; and



second gear means, coupling said second display means with said second shaft means, for incrementing said second display means by a fractional part at a time in response to rotation of said second shaft means by said predetermined degree of rotation;

whereby said knobs may be operated jointly and independently to set said first and second display means at selected settings.

3,879,693

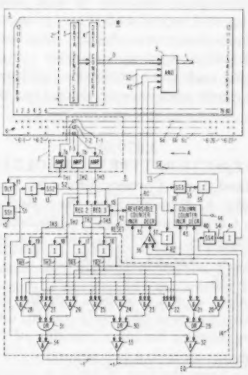
READER INDEPENDENT OF VARIATIONS IN FEED

Gerald S. Roscoe, and Wayne F. Vlack, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1974, Ser. No. 460,322

Int. Cl. G06k *7/10*

U.S. Cl. 235—61.11 R **14 Claims**



14. A system for reading information stored in an information storage medium in predetermined plural spatial positions, comprising:

readout means for providing information signals indicative of such information,

translationally movable carrier means supporting and moving the storage medium translationally in forward and reverse directions relative to said readout means, said carrier means having indicia thereon indicative of its direction of movement, said indicia being in correlated relationship with said plural spatial positions of the storage medium,

detection means for providing output signals in response to said indicia, and

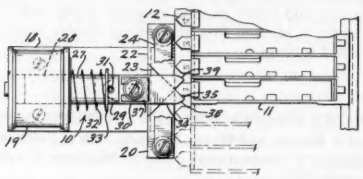
control circuit means responsive to said output signals for passing said information signals from said readout means to said output means in sequence as the carrier means is fed in the forward direction and inhibiting the passage of said information signals from said readout means to said output means whenever said carrier means is moved in the reverse direction and until said carrier means is subsequently fed in said forward direction to a point where the indicia associated with the next information position on the medium not previously read out by said readout means is detected by said detection means.

3,879,694

SOLENOID DRIVE MECHANISM ACTUATOR WITH ATTACHED MAGNET

Bernard A. Cousino, and David W. Morgan, both of Fort Myers, Fla., assignors to Cousino Corporation, Fort Meyers, Fla.

Filed Feb. 11, 1974, Ser. No. 441,327
Int. Cl. H01f *7/08*
U.S. Cl. 335—229 **8 Claims**



1. Drive mechanism for selectively driving a storage assembly having a plurality of spaced drive projections, comprising, a solenoid, a plunger having first and second ends, said first end of said plunger positioned within said solenoid and said second end extending outwardly of said solenoid, biasing means for urging said second end of said plunger outwardly of said solenoid, an actuator arm pivotally attached adjacent said second end of said plunger, said actuator arm having a drive end for engaging such drive projections and magnetic means on said actuator arm adjacent said second end of said plunger.

3,879,695

REJECTION TYPE FUSEHOLDER

Frederic Oakland, Hales Corners; Elmer M. Kunath, Milwaukee, and John A. Rauenbuehler, New Berlin, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 3, 1973, Ser. No. 403,258
Int. Cl. H01h *85/24*
U.S. Cl. 337—225 **9 Claims**

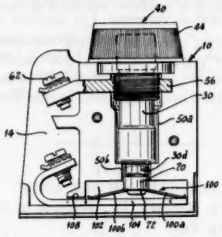
1. A fuseholder of the rejection type for a fuse having a specially constructed fuse tip configuration, comprising:

an insulating housing having a plurality of communicating compartments including two generally cylindrical shaped concentric bores the first of which is dimensionally sized to block and limit the insertion of the main body portion of a fuse having dimensions exceeding the physical dimensions of said first bore and the second of which is generally smaller than said first bore to further limit and block entry of a fuse that does not have the desired fuse tip configuration and a cavity adjacent to and opening to said second bore;

an electrical contact with said cavity;

spring biased means within said cavity and biasing said contact for reciprocal movement in said bore for engagement with a tip of a fuse having said special configuration;

means for securing a fuse which fits within said bores in



said housing and effecting electrical conductive engagement with the end of said fuse opposite that having said special tip configuration, and

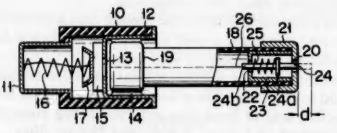
external terminal means mounted on said housing and having electrical connections with said contact and said securing means.

3,879,696

SURGE VOLTAGE ABSORBER

Yasutaka Imajyo, and Ikuo Takano, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 20, 1973, Ser. No. 426,599
Claims priority, application Japan, Feb. 20, 1973, 48-22003; Feb. 20, 1973, 48-22004
Int. Cl. H01h *85/30*
U.S. Cl. 337—244 **2 Claims**



1. A surge voltage absorber comprising:

a plurality of surge voltage absorber units each having an insulation tube provided with first and second terminals at their ends respectively, a non-linear resistor element electrically connected at its one end to said first terminal, a fusible element connected at its one end to the other end of said non-linear resistor element, and a projection pin which is connected to the other end of said fusible element and supported in said second terminal so as to be connected to said second terminal and to be projected by a bias means through a hole of said second terminal when said fusible element is interrupted;

an insulation substrate provided with first and second external connection terminals which serve to arrange in parallel a plurality of said surge absorber units in the same direction and detachably support said absorber units at their first and second terminals, respectively;

a lever rotatably mounted on said insulation substrate, one surface of said lever facing in common all the projection pins of said absorber units; and

a signal generator provided on said insulation substrate on the side facing the other surface of said lever so as to be operated by rotation of said lever, said rotation being caused by projection of at least one of said projection pins.

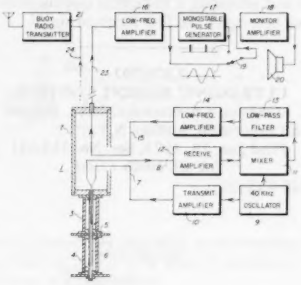
3,879,697
WIDE ANGLE FISH DETECTOR

Joseph D. Richard, 3613 Loquat Ave., Miami, Fla. 33133

Continuation-in-part of Ser. No. 61,900, Aug. 7, 1970, Pat. No. 3,757,286. This application June 18, 1973, Ser. No. 371,048The portion of the term of this patent subsequent to Sept. 4, 1990, has been disclaimed.

Int. Cl. G01s *9/70*

U.S. Cl. 340—3 D **5 Claims**



1. Apparatus for detecting the presence of moving aquatic animals at a discrete depth within a body of water comprising: a waterproof instrumented housing suitable for positioning at some discrete depth in a body of water;

means for continuously transmitting ultrasonic energy omnidirectionally in a least one plane into the water adjacent the said housing;

means for receiving ultrasonic energy reflected from objects in the water adjacent the said housing, said receiving means being omnidirectional in at least one plane;

means for deriving an output signal dependent on the frequency difference between said transmitted and received ultrasonic energy;

means for monitoring the frequency characteristics of said output signal; and

means for orienting said ultrasonic transmitting and receiving means at a discrete depth in a body of water so that the aforementioned omnidirectional transmission and reception are in a horizontal plane.

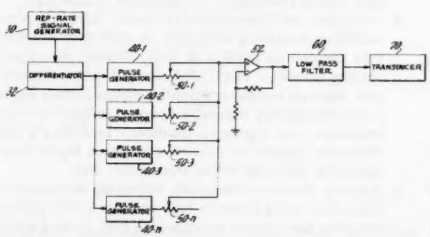
3,879,698
UNIPOLAR ACOUSTIC PULSE GENERATOR APPARATUS

Perry Arnold Pepper, Great Neck, N.Y., assignor to Edo Corporation, College Point, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,519

Int. Cl. H04b *11/00*

U.S. Cl. 340—5 R **50 Claims**



42. Apparatus for producing a unipolar displacement of the radiating faces of a plurality of electroacoustic transducers to produce an acoustic signal in an acoustic medium, said unipolar displacement having a half pulse duration time parameter t_o, the radiating faces of said transducers forming a coplanar array having a maximum dimension z, each of said transducers having a non-radiating face opposite said radiating face, characterized in that t_o is substantially equal to the time required for an acoustic wave to propagate through each of said transducers from one of its faces to the other and further characterized in that t_o is substantially equal to the time required for an acoustic wave to propagate a distance z in the acoustic medium, means for generating a signal waveform, and means for applying said signal waveform to said transducers.

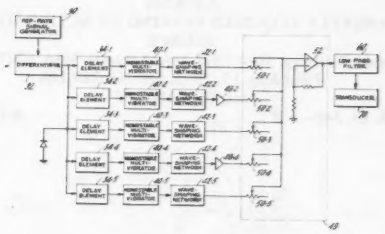
3,879,699
UNIPOLAR ACOUSTIC PULSE GENERATOR APPARATUS

Perry Arnold Pepper, Great Neck, N.Y., assignor to Edo Corporation, College Point, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,518

Int. Cl. H04b *11/00*

U.S. Cl. 340—5 R **20 Claims**



1. Apparatus for generating unipolar acoustic pulses in an acoustic medium comprising:

a transducer having a radiating face and an opposite non-radiating face and

means for applying a signal to said transducer for causing the radiating face of the transducer to displace from a rest position to maximum displacement during a first interval of time t_o and to return from maximum displacement to said rest position during a second subsequent interval of time t_o, wherein t_o is substantially equal to an integer multiple of the time required for an acoustic wave to propagate from one face of the transducer to the other.

3,879,700
DEVICE FOR CONVERTING AN ACOUSTIC PATTERN INTO A VISUAL IMAGE

Sarkis Barkhoudarian, Madison Heights; Charles Bruce Johnson, Southfield, and George G. Goetz, Farmington, all of Mich., assignors to The Bendix Corporation, Teterboro, N.J.

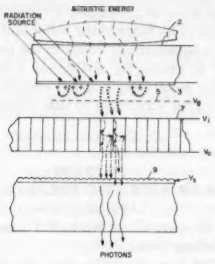
Filed Dec. 12, 1972, Ser. No. 314,313

Int. Cl. H04b *11/00*

U.S. Cl. 340—5 MP **20 Claims**

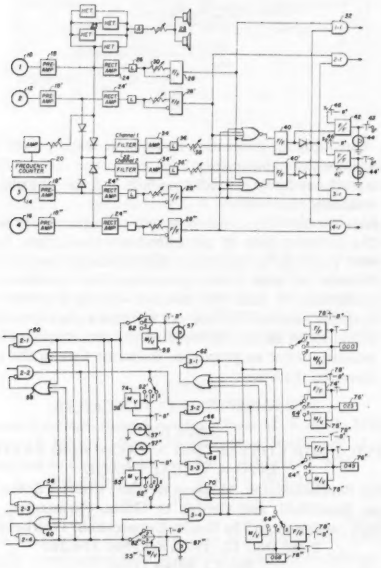
1. A device for converting an acoustic pattern into a visual image, comprising a piezoelectric transducer for receiving the acoustic pattern and providing an electronic charge pattern corresponding thereto, a source of electrons associated with the piezoelectric transducer for providing an electron current, means for biasing the electron current at a potential to provide an electron current modulated by the electronic charge pattern and having an average which varies in accordance with

the acoustic pattern, a microchannel plate electron multiplier for amplifying the modulated electron current, and means for



converting the amplified electron current to a visual image corresponding to the acoustic pattern.

3,879,701
PASSIVELY ACQUIRED BEARING TO ACTIVE SONAR SOURCE
Gerald W. Stagg, 1014 Flint Ave., Laramie, Wyo. 82070
Filed Aug. 17, 1973, Ser. No. 389,108
Int. Cl. G01s *3/80*
U.S. Cl. 340—6 R **8 Claims**



1. A passive bearing to active sonar source detection apparatus comprising:

a. a plurality of omnidirectional hydrophones equally and circularly spaced forming an array for receiving a sonar signal,

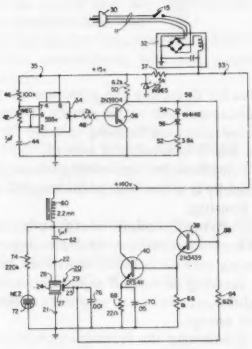
b. a plurality of means coupled to said hydrophones for analyzing the frequency and amplitude of each signal successively received by each hydrophone,

c. a plurality of means coupled to said analyzing means for gating a received signal only within a predetermined frequency band and amplitude,

d. a plurality of means coupled to said gating means and being responsive to the output signal from said gating means for inhibiting all signals from hydrophones except signals from the hydrophone first receiving said gated signal,

e. a plurality of indicating means coupled to said gating means for indicating which hydrophone first received said signal and providing a numerical display readout of the relative bearing of the first received signal.

3,879,702
ULTRASONIC RODENT CONTROL
Joseph G. Mancone, Cheektowaga, N.Y., assignor to Sierra Research Corporation, Buffalo, N.Y.
Filed Jan. 15, 1973, Ser. No. 323,631
Int. Cl. H04b *11/00*
U.S. Cl. 340—15 **2 Claims**



1. Apparatus for generating and radiating ultrasonic sound waves for the control of pests, comprising:

a. a housing and a concave dish-shaped reflector having a central portion fixed to one face of the housing;

b. a ring-shaped piezoelectric transducer resiliently mounted in cushioned relationship within the concave reflector on said central portion opposite the housing, the transducer comprising a vibratory crystal element having main electrodes and having a feedback electrode;

c. oscillatory tank circuit members mounted in the housing and including an inductance coupled to the main electrodes of the crystal element to form therewith a tuned tank circuit resonant at an ultrasonic frequency;

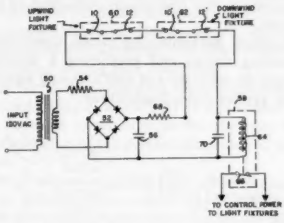
d. transistor oscillator-amplifier means including a power oscillator transistor mounted in heat-sink relationship with the central portion of said reflector means and including transistor electrodes coupled with said tank circuit, and said oscillator amplifier means further including a driver amplifier transistor coupled to drive said power transistor, and the driver transistor including a control electrode coupled to receive a feedback signal from the feedback electrode of the transducer; and

e. a timing circuit continuously delivering an output waveform alternating between high and low levels, and means coupling said output waveform to said control electrode of the driver transistor, said feedback signal combining with said output waveform at the control electrode to alternately bias the latter into and out of a bias range in which the oscillator-amplifier means can sustain oscillations.

3,879,703
TILT SENSOR

Robert P. Bonazoli, Hamilton, and Charles R. Janvier, Amesbury, both of Mass., assignors to GTE Sylvania Incorporated, Salem, Mass.

Filed July 11, 1973, Ser. No. 378,156
Int. Cl. G08g 5/00
U.S. Cl. 340—25 9 Claims



1. A sensing system for detecting predetermined angles of tilt misalignment of positionally aligned equipment, said system comprising, in combination:

a power supply;

a pair of series connected mercury switches coupled to said power supply and mounted on said equipment with opposite tilt sensing orientations, for detecting both positive and negative angles of tilt misalignment;

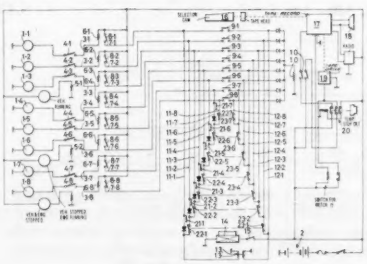
signal output means series connected with said pair of mercury switches across said power supply and operative to be energized by said power supply when said mercury switches are in a normally closed circuit condition and to be deenergized when one of said mercury switches is in an open circuit condition, which occurs in response to a predetermined tilt misalignment of said equipment;

and electrical circuit means connected to said signal output means for time delaying deenergization thereof, whereby said system is substantially insensitive to vibration of said equipment.

3,879,704
WARNING APPARATUS FOR VEHICLES OR THE LIKE

Akio Noji, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1974, Ser. No. 430,584
Int. Cl. G08b 19/00
U.S. Cl. 340—52 F 6 Claims

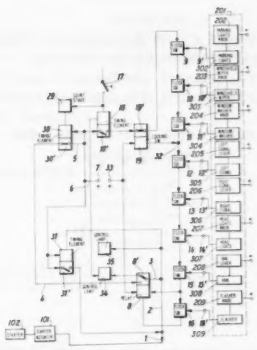


1. Warning apparatus comprising a plurality of detecting devices for detecting different conditions having sequential degrees of importance, alarm means responsive to said detecting devices for producing respective and different sound alarms for each condition, and further means coupling said devices to said alarm means and providing, in the event of simultaneous operation of more than one said device, for the producing of a sound alarm corresponding only to the detected condition of highest degree of importance, said further means including a plurality of parallel circuits coupled between respective of said devices and said alarm means, relay coils in respective of said circuits and contact means cooperating with said coils and arranged in respective of said circuits to open the circuits corresponding to lesser degrees of importance when a circuit corresponding to a higher degree of importance is actuated.

3,879,705
MOTOR VEHICLE TEST APPARATUS HAVING FACILITIES FOR SIMULTANEOUSLY TESTING THE DRIVING CAPABILITY OF A VEHICLE OPERATOR

Hans Binder, and Helmut Luthe, both of Wolfsburg, Germany, assignors to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH, Bietigheim, Germany

Filed Nov. 16, 1972, Ser. No. 307,041
Claims priority, application Germany, Nov. 19, 1971, 2157377
Int. Cl. B60r 25/04
U.S. Cl. 340—53 14 Claims



1. In a motor vehicle provided with (a) a normally disabled activating means, (b) an interlock system for selectively enabling the activating means wherein the interlock system includes N normally unoperated first switching means (N>1) each having an enabling input together with means for connecting all the first switching means in tandem to complete an enabling path to the activating means only when the tandem-connected first switching means have been operated in a prescribed sequence, the operation of each first switching means being effective to condition the succeeding first switching means for operation so that said succeeding first switching means may be operated upon the excitation of its enabling input, and (c) normally unoperated second switching means coupled to the input one of the tandem-connected first switching means and operable in response to an initiating pulse for conditioning the first switching means for operation, the improvement wherein:

the vehicle further comprises, in combination, at least N standard, manually operated electrical accessory switches distributed in the vehicle in accessible relation to an operator of the vehicle for controlling a corresponding number of standard accessories, and means for individually coupling N of the accessory switches to the enabling inputs of the first switching means in a selected pattern so that the manual actuation of each accessory switch by the operator is effective to operate the associated first switch-

ing means when the latter is conditioned for operation; and

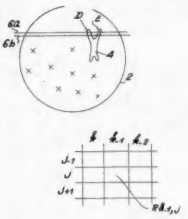
the second switching means includes first timing means rendered effective by the initiating pulse for disabling the conditioned input one of the first switching means after a predetermined time, whereby the interlock system is prevented for enabling the activating means until the satisfactory and simultaneous completion of both a sequential testing procedure for the N accessories and the completion by the operator of N sequential manual tasks as represented by one of the above-mentioned manual switch operations.

3,879,706

METHOD AND DEVICE FOR THE AUTOMATIC SELECTION OF CHROMOSOME IMAGES DURING METAPHASE

Charles Favier, Lyon; Roland Le Go, Antony, and Edmond Tournier, Grenoble, all of France

Filed Oct. 27, 1972, Ser. No. 301,482
Claims priority, application France, Nov. 3, 1971, 71.39422
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 R **11 Claims**



1. A method for the automatic selection of metaphase images contained in a preparation, comprising the steps of:

subdividing each image of the preparation to be tested step by step in a lattice of adjacent rectangles which are distributed in lines and columns,

measuring the optical density of each rectangle and assigning the binary value of 1 to each of said rectangles if the optical density thereof is within a range limited by two preset threshold levels and assigning the value 0 thereto if said optical density is not within said range,

identifying a characteristic spatial dispersion among the rectangles having the assigned value of 1.

3,879,707

CHARACTER RECOGNITION SYSTEM FOR BAR CODED CHARACTERS

Gene D. Rohrer, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,936
Int. Cl. G06k 9/18
U.S. Cl. 340—146.3 C **2 Claims**

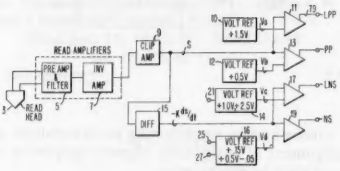
1. A character recognition system for recognizing bar coded characters composed of a plurality of vertical bars separated by long or short intervals between the strokes, comprising, in combination

scanning means for scanning said characters and producing a scanning signal having a first polarity when said scanning means scans the leading edge of each of said bars, and producing a scanning signal having a second polarity when said scanning means scans the trailing edge of each of said bars,

first amplitude discriminating means connected to said scanning means and producing a first output signal when a scanning signal of said first polarity and exceeding a fixed predetermined amplitude is supplied thereto from said scanning means,

differentiating means connected to said scanning means to receive said scanning signals and to supply output signals corresponding to the continuous derivative of said scanning signals,

second amplitude discriminating means connected to said differentiating means and producing a second output signal when the derivative of said scanning signal exceeds a variable predetermined amplitude,



amplitude level control means connected to said second amplitude discriminating means and effective to vary the predetermined amplitude at which said second discriminating means is effective,

analyzing means connected to said first and said second amplitude discriminating means for decoding the combinations of signals supplied therefrom to provide output signals indicative of the characters scanned, and

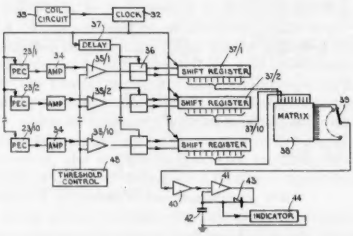
bistable means connected to said analyzing means and to said amplitude level control means to provide a binary and hysteretic control of the variable predetermined amplitude of said second amplitude discriminating means.

3,879,708

APPARATUS FOR ASSESSING QUALITIES OF RECORDED CHARACTERS

Paul Raymond Fryer, Melksham, and Walter Robert Throssell, Hitchin, both of England, assignors to International Computers Limited, Hertfordshire, England

Continuation-in-part of Ser. No. 190,729, Aug. 20, 1971, abandoned. This application July 16, 1973, Ser. No. 379,833
Claims priority, application United Kingdom, July 1, 1971, 30849/71
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 AG **1 Claim**



1. Apparatus for matching characteristics of a printed character with a preferred standard form of that character to evaluate the suitability of the printed character for use in a character recognition system, including

scanning means arranged to scan in a single operation a predetermined planar area, the area being of greater extent than is required to contain the character;

means for supporting a document carrying the printed character in a position in which the character is in the plane of but not lying wholly within said area;

means operable to move the document along a path such that the character lies within the area throughout at least a part of the path, the movement permitting scanning of the entire character, the scanning being arranged during movement of the document repeatedly to scan the area in a succession of scanning operations to derive a first signal representing for each operation those parts of the character scanned during that operation;

a character store containing representations of preferred standard forms of a plurality of characters;

means operable to select from the store the standard form representation of the printed character to derive a second signal;

comparing means responsive to said first and said second signals to generate an output whose magnitude is proportional for each complete scanning operation to the degree of divergence of the scanned portion of the printed character from the standard form;

a signal storage device responsive to the output from each successive scanning operation such that a stored signal is changed only if the magnitude of the current output is less than the least of the outputs from preceding scanning operations, whereby the stored signal at the end of the succession of scanning operations has a magnitude proportional to the least deviation of the printed character from the standard form during the succession; and

means responsive to the stored signal to produce a visual indication of said least deviation under the best possible match conditions occurring during the succession.

3,879,709

LOCKING SYSTEM USING RADIO WAVE

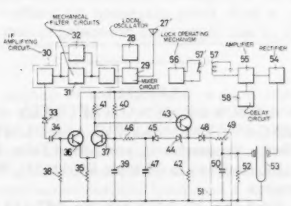
Hiroyuki Yukawa, No. 104, Aza Naeshiro, Oaza Obata, Moriyama-ku, Nagoya-shi, Aichi-ken, Japan

Continuation-in-part of Ser. No. 50,399, June 29, 1970, abandoned. This application Aug. 9, 1972, Ser. No. 279,261

Claims priority, application Japan, July 1, 1969, 44-52389; July 21, 1969, 44-57478

Int. Cl. H04q *7/00*

U.S. Cl. 340—171 R **2 Claims**



1. A locking system using radio waves, comprising:

a transmitting means comprised of a low frequency oscillation circuit including a first mechanical filter circuit and an instantaneous starting circuit coupled to said mechanical filter circuit, said instantaneous starting circuit comprised of a capacitor and two resistors connected, seriatim, in series, the junction of said resistors coupled to the input of said mechanical filter circuit, an amplifying circuit coupled to the the output of said low frequency oscillation circuit, a half-wave rectifying circuit for rectifying a low frequency signal generated by said low frequency oscillation circuit and coupled thereto, means operatively coupled to said half-wave rectifying circuit for producing a rectangular output wave, and high frequency oscillation means operatively coupled to said rectangular output wave means and operated interruptedly by a rectified rectangular wave therefrom; and

receiving means for receiving an electric signal transmitted from said transmitting means, said receiving means comprised of a frequency detection circuit having a filter circuit for passing only a narrow range of high frequency and low frequency signals, a second mechanical filter circuit, a peak value forming circuit for amplifying and attenuating a peak value of the detected output from said frequency detection circuit and coupled thereto in order to provide a constant output therefrom, an integral circuit coupled to said frequency detection circuit and second mechanical filter, said integral circuit comprised of a variable resistor and a condensor, said second mechanical filter circuit being responsive only to a predetermined integrated signal derived by said integral circuit from one of a sine wave and a rectangular wave having prescribed frequencies and peak values, a rectifying circuit coupled to said mechanical filter, a DC amplifying circuit, a first input of said DC amplifying circuit coupled to said rectifying circuit and a delay circuit coupled to a second input of said DC amplifying circuit, whereby an output signal for operating a locking mechanism can be obtained.

3,879,710

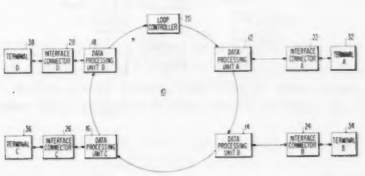
DATA PROCESSOR FOR A LOOP DATA COMMUNICATIONS SYSTEM

Nicholad Frank Maxemchuk, Trenton, and Hugh Edward White, Pennington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 1, 1974, Ser. No. 447,220

Int. Cl. H04j *3/12*

U.S. Cl. 340—172.5 **6 Claims**



1. A given data processor for a time division multiplexed communications system, wherein a plurality of data processors are connected in series in a loop configuration, each of said data processors being associated with a data terminal, each of said data processors further having a calling and a called mode of operation for transmitting and receiving digital information signals to and from said loop in a selected time division multiplexed channel within a frame of channels, said frame comprising a plurality of sub-frames, each sub-frame being preceded by a digital address signal, each channel comprising at least a first and a second time slot, said given data processor comprising:

first means adapted to receive said digital information signals from said loop;

channel identification means connected to said first means and responsive to said digital address signals for locating said first and second time slots of said selected time division multiplexed channel;

second means for inserting digital data signals onto said loop from the associated data terminal in said second time slot of said selected channel when said given data processor is in said calling mode of operation and for inserting digital data signals onto said loop from said associated data terminal in said first time slot of said

selected channel when said given data processor is in said called mode of operation;

third means for inserting a digital connection signal, indicative of the status of a connection between said given data processor and another data processor on said loop, in said first time slot of said selected channel when said given data processor is in said calling mode of operation and for inserting said digital connection signal in said second time slot of said selected channel when said given data processor is in said called mode of operation; and

busy indication means coupled to said channel identification means for analyzing said first and second time slots of said selected channel and for detecting the presence of said digital connection signal from another data processor, said busy indication means preventing access to said selected channel by said given data processor when a digital connection signal is detected in said first or said second time slot.

3,879,711

SOFTWARE ACCESSIBLE SENTINEL MEMORY AND COMPARATOR FOR CONTINUOUSLY MONITORING THE CONTENTS OF THE INSTRUCTION REGISTER OF THE CENTRAL MEMORY UNIT IN A DIGITAL DATA PROCESSING SYSTEM

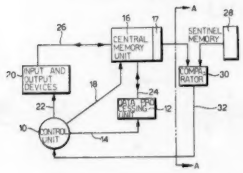
Massimo Boaron, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Oct. 12, 1972, Ser. No. 297,158

Claims priority, application Italy, Oct. 12, 1971, 70340/71

Int. Cl. G06f *1/00;* **G11c** *11/00*

U.S. Cl. 340—172.5 **2 Claims**



1. Digital electronic data processing apparatus of the type comprising at least one data processing unit, a central memory unit having an instructions register which controls said central memory unit and a control unit, wherein the improvement consists in the provision of a sentinel memory adapted to receive a given programmed instruction and an identity comparator adapted to compare continuously the contents of the instructions register of the central memory unit with the contents of the sentinel memory and sending a control signal to the control unit only when the contents of the instructions register and the sentinel memory are identical.

3,879,712

DATA PROCESSING SYSTEM FAULT DIAGNOSTIC ARRANGEMENTS

Gordon Edge, Poole, and George Worthington, Bournemouth, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed May 31, 1973, Ser. No. 365,666

Claims priority, application United Kingdom, June 3, 1972, 26033/72

Int. Cl. G06f *11/00*

U.S. Cl. 340—172.5 **5 Claims**

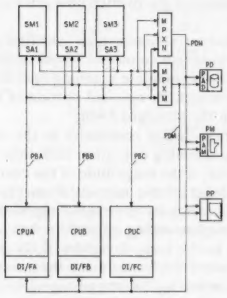
1. A digital data processing system comprising in combination:

a plurality of processor modules;

a plurality of data communication paths, one for each processor module allocated on a mutually exclusive basis and arranged to carry processor module generated address information;

a plurality of multi-port access units each including a data communication path selection and termination means and an identity address recognition means conditioned with a unique identity code and responsive to said unique identity code within said address information when applied to any one of said data communication paths;

a plurality of addressable memory modules each having a unique identity and incorporating one of said access unit;



a group of addressable peripheral equipments each having a unique identity and incorporating one of said access units and

a plurality of diagnostic interface units one for each processor module and each having a unique identity and incorporating one of said access units and including an address decoder and a plurality of address-decoder selectable monitor, control and data injection points internal to the processing equipment of the said processor module and said address decoder is responsive to part of said address information accompanying the unique identity code particular to a diagnostic interface, a processor module having a fault being diagnosed by another processor module of said digital data processing system.

3,879,713

TRANSMISSION OF SIGNALS BETWEEN A DATA PROCESSING SYSTEM AND INPUT AND OUTPUT UNITS

Hubertus Bettin, Braunschweig, and Alfred Folta, Ilsede, both of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed Oct. 17, 1973, Ser. No. 407,132

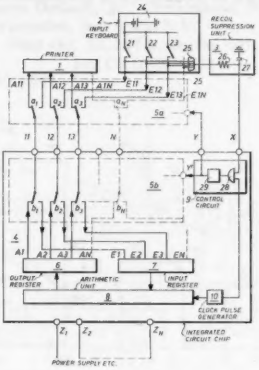
Claims priority, application Germany, Oct. 19, 1972, 2251225

Int. Cl. G06f *3/12*

U.S. Cl. 340—172.5 **8 Claims**

1. A circuit arrangement for transmitting signals between a data processing means and external input means and external electromechanical output means, said arrangement comprising, in combination: a plurality of terminals connected to said data processing means; a plurality of first switching means, each associated with a respective one of said terminals, said first switching means normally connecting their respective terminals with said external electromechanical output means; and control means having its input coupled to said external input means to determine the presence, at said external input

means, of information to be supplied to said data processing means and in response thereto switching said first switching



means for causing said terminals to be temporarily connected to said external input means.

3,879,714

METHOD OF RECORDING INFORMATION WITH A PICTURE STORAGE TUBE AND READING WITHOUT ERASING THE INFORMATION

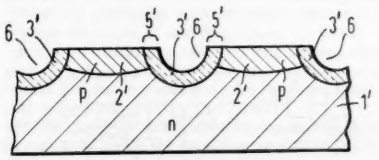
Werner Veith, and Wolfgang Welsch, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Division of Ser. No. 171,885, Aug. 16, 1971, abandoned. This application Apr. 18, 1973, Ser. No. 352,231

Claims priority, application Germany, Aug. 20, 1970, 2041496

Int. Cl. G11c *11/42, 11/32;* **H01j** *31/26*

U.S. Cl. 340—173 CR **7 Claims**



6. In a method of recording information with a picture storage tube having a memory signal plate, means for generating an electron beam and means for deflecting the beam for scanning one side of the memory plate, said plate being a signal plate of an N-conductive material having a plurality of circular P-conductive portions spaced on a surface of the N-conductive material and forming a plurality of spaced photo diodes therewith, said N-conductive material having a consistent layer of insulating material of SiO_2 on the surface of the signal plate between the P-conductive portions with the insulating material covering a peripheral edge portion of said P-conductive portions to form a circular storage and control ring around each P-conductive portion, said method including the steps of erasing the signal plate, writing information on the plate by exposing the other side of the plate with radiation containing the information to be recorded, and reading the information from the plate, the improvement in the method comprising changing the value of potential applied to the signal plate for each of the steps of writing, reading and erasing with the value of potential applied during the writing step being greater than the potential applied during the reading step and less than the potential applied during the erasing step so that the step of reading the photo diodes of the signal plate is accomplished without erasing the information contained thereon and enables subsequent reading steps.

3,879,715

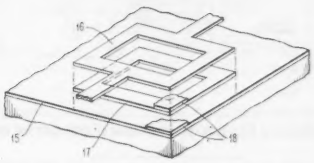
DAMPED JOSEPHSON JUNCTION MEMORY CELL WITH INDUCTIVELY COUPLED RESISTIVE LOOP

Hans H. Zappe, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,412

Int. Cl. G11c *11/44, 5/02*

U.S. Cl. 340—173.1 **17 Claims**



1. A memory cell comprising a superconducting first loop with at least one Josephson device therein, said loop having an equivalent circuit comprising a parallel combination of a resistor R_J, a capacitor C and an inductance L, wherein $R_J > \frac{1}{2}\sqrt{L/C}$,

and a second loop including resistive means, said second loop in flux-coupling relation to said first loop to provide an effective equivalent resistance in said first loop which is $\frac{1}{2}\sqrt{L/C}$.

3,879,716

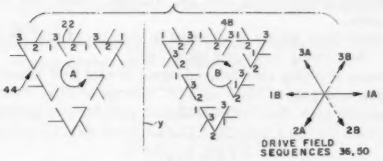
MUTUALLY EXCLUSIVE MAGNETIC BUBBLE PROPAGATION CIRCUITS WITH DISCRETE ELEMENTS

Paul T. Bailey, Creve Coeur, Mo., and L. John Doerr, III, Houston, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 6, 1974, Ser. No. 448,649

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **31 Claims**



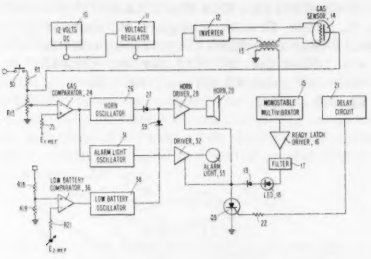
1. A field-accessed bubble propagation system, comprising a sheet of magnetic bubble material, means for producing and maintaining bubbles therein, a ferromagnetic overlay circuit operatively disposed on said sheet including at least one discrete element having a straight stem portion with an angled arm projecting from one end thereof and making an acute angle with said stem portion and another angled arm projecting from the middle of said stem portion making an acute angle therewith on the other side thereof, and means for applying a magnetic drive field in the plane of said sheet to propagate bubbles along said stem portion.

3,879,717

PORTABLE METHANE MONITOR AND ALARM SYSTEM

Kurt Gruensfelder, Dresher, Pa., assignor to K-F Industries, Inc., Philadelphia, Pa.

Filed June 19, 1974, Ser. No. 480,730
Int. Cl. G08b 17/10
U.S. Cl. 340—237 R 19 Claims



1. A methane or like gas monitor and alarm device comprising:

a. gas-sensing means which, in response to the presence of methane or like gas, exhibits a change in its electrical conductivity;

b. means for passing current through said gas-sensing means;

c. comparison means;

d. means applying the output of said gas-sensing means to said comparison means;

e. first and second oscillators;

f. means for applying the output of said comparison means to said first and second oscillators in parallel;

g. first and second amplifier means coupled respectively to the outputs of said first and second oscillators;

h. gate means;

i. horn alarm means;

j. flashing-lamp alarm means;

k. means, including said gate means, coupling the outputs of said first and second amplifier means to said horn alarm means and to said flashing light alarm means respectively;

l. said gate means being closed unless opened by a gate signal, whereby said horn alarm and said flashing-lamp alarm are inoperative unless said gate means is open;

m. means responsive to change in current through said gas-sensing means for developing trigger pulses;

n. means responsive to said trigger pulses for developing a DC voltage;

o. means for applying said DC voltage across said gate means;

p. initial delay means responsive to turn-on of said device for developing a delayed signal; and

q. means applying said delayed signal to said gate means to open said gate to allow said DC voltage to drive current therethrough, thereby to latch said gate in open position.

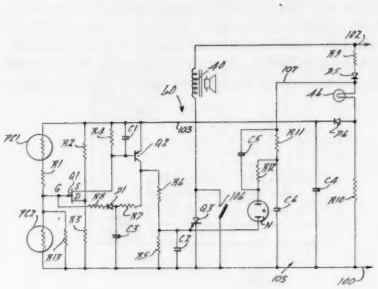
3,879,718

SMOKE DETECTION UNIT WITH DUAL PURPOSE ALARM CIRCUIT

Gordon A. Roberts, P.O. Box 1288, Ann Arbor, Mich. 48106

Division of Ser. No. 72,627, Sept. 16, 1970, abandoned. This application May 17, 1973, Ser. No. 361,138
Int. Cl. G08b 17/10, 19/00
U.S. Cl. 340—251 6 Claims

1. In a unit for detecting and signaling the existence of smoke in room air above a predetermined level, a casing having a smoke detection chamber therein, a light source in said casing operable to provide for light in said chamber, an alarm circuit utilizing a single sound emitting device for producing distinguishable sounds for indicating different conditions which it is desired to detect, namely, an alarm condition indicating the existence of room air smoke above a certain level and a trouble condition indicating burnout of said light source, said circuit including first circuit means operable to actuate said device to produce a first continuous sound indicating said alarm condition, and second circuit means operable to actuate said device to produce an intermittent sound distinguishable from said first sound and indicating said trouble condition.

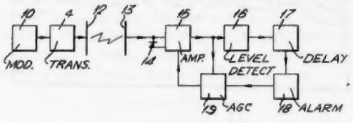


3,879,719

FLAT BEAM INTRUDER DETECTION DEVICE

Norman Ian Buckley, Blackburn, and Brian Michael Mansfield, Haslingden, both of England, assignors to Shorrock Developments Limited, Blackburn, Lancashire, England

Filed May 21, 1973, Ser. No. 362,395
Int. Cl. G08b 13/18
U.S. Cl. 340—258 B 6 Claims

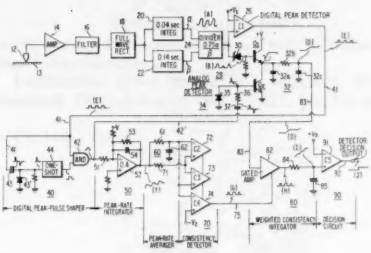


1. An intruder detecting device comprising an ultra-high frequency transmitter and an aerial having a polar diagram producing a flat beam of radiated energy; a receiver with a receiving aerial having a polar diagram with a directive characteristic, the receiver and aerial being located remotely from the transmitter aerial so as to receive energy from said transmitter, with the polar diagrams of the transmitter and receiver aerials overlapping, and signal processing means fed from said receiver to operate an alarm when a predetermined form of received signal change occurs; said transmitter comprising an elongate strip of insulating material and an electrically conductive array printed thereon, said array including a series of parallel dipoles alternately staggered, from one end of the strip, on opposite sides of the center line of the array and increasingly spaced from such center line with respect to their location away from said one end of the strip, said array being terminated in a load resistor and said transmitter being connected to said array at said one end of the strip whereby substantially equal radiation takes place from each dipole.

3,879,720
ENERGY PEAK/TIME AVERAGING SEISMIC INTRUSION DETECTOR

George James Dusheck, Jr., Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,469
Int. Cl. G08b 13/00
U.S. Cl. 340—261 15 Claims



1. A seismic intrusion detector for discriminating between periodic energy bursts and other seismic signals, said detector comprising:

1. input means for receiving seismic energy signals;
2. means coupled to said input means for detecting energy peaks from energy bursts in said seismic signals;
3. means coupled to the detecting means and responsive to the detected energy peaks for producing a first signal, said first signal having an amplitude proportional to the average rate of the detected peaks and said first signal having a time-varying amplitude component indicative of the period of each of said peaks;
4. means for producing a second signal indicative of the average amplitude of said first signal;
5. means for comparing said first and second signals to provide a third signal when the time-varying component of said first signal is within a predetermined range about said second signal; and
6. means coupled to said comparing means and responsive to said third signal for providing an output signal when the integrated value of said third signal exceeds a predetermined level.

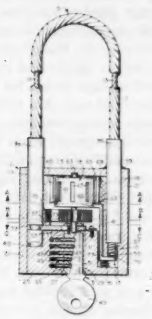
3,879,721
LOCK HAVING FLEXIBLE SHACKLE WITH SEVERANCE ALARM

Robert A. Yereance, 1362 Meadow Rd., Columbus, Ohio 43212

Filed Sept. 27, 1973, Ser. No. 401,194
Int. Cl. G08b 13/12
U.S. Cl. 340—274 6 Claims

1. In a lock, the combination of:

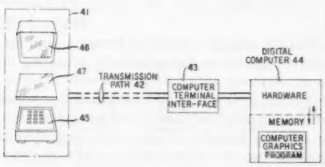
a. a lock casing including a locking mechanism for locking and unlocking a shackle therein;
b. a flexible shackle including an outer tubular cable having opposite ends arranged to be locked to said casing and a continuous filament slidably carried in said cable;
c. means engaged with the filament of said shackle and normally applying a tensile force thereto;
d. signal-producing means in said lock casing; and
e. trigger means in said casing connected between the filament of said shackle and said signal-producing means and arranged normally to engage and hold said signal-producing means against activation, but movable to activate said signal-producing means in response to the severance of the filament of said shackle.



3,879,722
INTERACTIVE INPUT-OUTPUT COMPUTER TERMINAL WITH AUTOMATIC RELABELING OF KEYBOARD

Kenneth Charles Knowlton, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 10, 1973, Ser. No. 422,995
Int. Cl. G06k 15/18
U.S. Cl. 340—324 R 16 Claims



1. A computer input-output device comprising:

a visual display device for displaying graphical or alphanumeric images;
a keyboard containing at least one manually operated key; and
optical means for producing virtual images from said visual display device upon said keyboard.

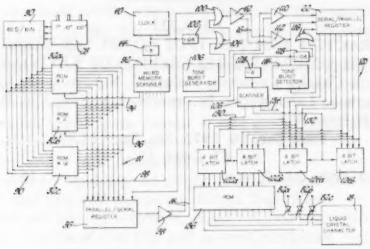
3,879,723
DESTINATION SIGN SYSTEM USING LIQUID CRYSTAL DISPLAY DEVICES

Thomas F. Hornung, Berkley, Mich., assignor to Transign, Inc., Pontiac, Mich.

Filed Dec. 21, 1972, Ser. No. 317,486
Int. Cl. G09f 9/32
U.S. Cl. 340—336 4 Claims

1. A programmable display system for information comprising: a plurality of field-responsive liquid crystal character display devices disposed in lineal juxtaposition to form a sign, each of said character display devices comprising a plurality of separately actuable character-forming segments whereby each device may represent any of a plurality of individually recognizable characters, input means for producing any of a plurality of digital input programs, data storage means connected to said input means and responsive to said programs for producing a plurality of multiple bit data words each repre-

senting segments of a character in said sign to be actuated to represent the programmed information; and transmitting means for distributing said data words to said segments of said liquid crystal character display devices, said transmitting means comprising first register means connected with said storage means for serializing the bits of said data words, clock means, first scanning means controlled by said clock means and connected with said storage means for causing said plurality of data words to be read one at a time into said register means, said input means, storage means, clock and transmitting means being located remotely from said sign, receiving means located proximate said sign and including a latch register means for each character of said sign; second register means for receiving said plurality of data words with the bits thereof in serial form and for converting the bits of each word into parallel form, a first transmission line connecting the first and second register means for transmission of the bits of the data words in serial form, each of said latch register means being connected between said second register means and a respective character display device, power supply means for said liquid crystal display devices, a plurality of electronic switch devices connected respectively to said segments and to said power supply and having an actuating input for selective



actuation thereof, means connected between said latch registers and said switch inputs for selectively actuating the switch devices in accordance with said data words, second scanner means connected by a second transmission line to said clock and controlled thereby and connected to said second register means for causing transfer of one word at a time from the second register means to successive latch register means, whereby each latch register means maintains continuous actuation of its respective display device during the subsequent actuation of the remaining display devices in said sign, generator means for generating a synchronizing signal having a frequency which is less than the frequency of said clock means, said generator means being connected with said second register for synchronizing the actuation thereof with said data words, detector means connected with said second register for detecting the occurrence of said synchronizing signal at the end of transmission of all of said plurality of data words, and reset means connected between said detector means and said second register for resetting said second register after receipt of said plurality of data words whereby the succeeding transmission of said data words will be effective to provide data to said latch registers in accordance with such succeeding transmission.

3,879,724

INTEGRATING ANALOG TO DIGITAL CONVERTER

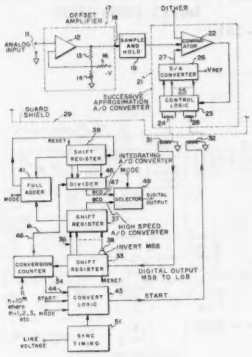
John C. McDonald, Los Altos, Calif., assignor to Vidar Corporation, Mountain View, Calif.

Filed Nov. 19, 1973, Ser. No. 417,367

Int. Cl. H03k *13/17*

U.S. Cl. 340—347 AD **9 Claims**

1. An integrating analog to digital converter comprising: successive approximation analog to digital (A/D) converting means to provide a substantially instantaneous digital output signal indicative of the amplitude of an analog input signal; means coupled to said A/D converting means for initiating consecutive A/D conversions; means for adding the digital outputs of a predetermined number of said consecutive con-



versions; means for dividing the sum of said additions by said predetermined number to provide an integrated digital output representative of said analog input signal.

3,879,725

INDICATING APPARATUS FOR MONITORING THE OPERATIVE STATUS OF A HEADING OR COAL FACE CUTTING MACHINE

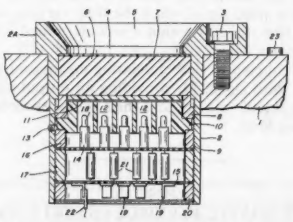
Karl-Heinz Weber, Witten-Heven, and Hans Nohendorf, Dorsten, both of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Sept. 18, 1973, Ser. No. 398,422

Claims priority, application Germany, Sept. 23, 1972, 7235130

Int. Cl. G08b *5/36*

U.S. Cl. 340—378 A **11 Claims**



1. In a mining machine such as a coal tunneling machine or a coal face cutting machine, an intrinsically safe indicating apparatus to monitor a plurality of different operative conditions and/or operative status of parts of such machines, said indicating apparatus comprising:

a plurality of individually energizable lamps for monitoring different operative conditions and status of a mining machine;

a plate having spaced-apart openings for individually receiving a lamp of said plurality of lamps;

elongated housing means enclosing an internal chamber defined between a wall flange at one end of the housing and a threaded surface at the other end thereof for receiving said perforated plate with said lamps projecting into said openings;

a transparent plate supported against said wall flange within said internal chamber for visual observation externally of said housing means,

fastening means carried by said threaded surface to extend toward said wall flange for holding said transparent plate in a sealed, gas-tight relation with said wall flange; and

means defining symbols upon the surface of said transparent plate externally of said chamber for separate illumination through said transparent plate by a lamp of said plurality of lamps.

3,879,726

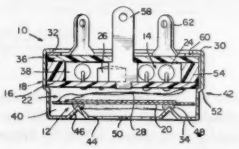
AUDIBLE ALARM UNIT

Louis P. Sweany, Carmel, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 236,307, March 20, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,453

Int. Cl. G08b *3/00*

U.S. Cl. 340—384 E **7 Claims**



1. An audible alarm unit comprising:

a. a housing including a cup-shaped member having open and closed ends, first and second storage compartments, and a cover closing said open end,

b. shelf means providing a means separating said compartments,

c. an aperture in said closed end providing an opening to one of said compartments, and a rib surrounding said aperture,

d. a piezoelectric transducer bonded to said rib and having a vibrating surface exposed to said aperture,

e. a printed circuit board assembly carried by said shelf in the other of said compartments including an electrical circuit for energizing said piezoelectric transducer,

f. electrical terminals extending from said printed circuit board assembly out through said cover,

g. alarm unit mounting means comprising a ring carried by said cover and a plurality of ears extending from said ring, and

h. spacer means carried by and disposed between said printed circuit board and said cover to maintain said printed circuit board and cover in spaced relation.

3,879,727

DIGITAL DATA HANDLING SYSTEM

Peter William East, Felbridge, near East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

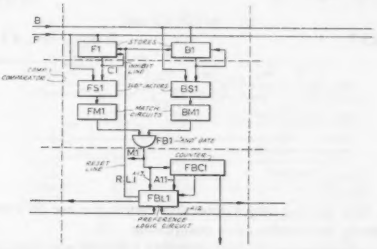
Filed Oct. 15, 1973, Ser. No. 406,375

Claims priority, application United Kingdom, Oct. 16, 1972, 47583/72

Int. Cl. G01s *9/02*

U.S. Cl. 343—5 DP **4 Claims**

1. A digital data handling system for use in connection with receiver means adapted for receiving signals from a plurality of transmitters, comprising: means for converting the received signals into parallel output trains of binary digital information representing predetermined parameters of each signal, a plurality of groups of storing units arranged in parallel storing channels connected to respective outputs of said converting means, a plurality of comparing means each assigned to at least one pair of storing units in each group for producing an output signal when the stored digital information in each unit of said pair corresponds to information at corresponding outputs of said converting means, a plurality of counting means assigned to each comparing means and controlled by the output signal therefrom, and a plurality of preference logic



circuits each assigned to a pair of storing units for producing a reset signal for said pair when a coincidence of output signals from a corresponding comparing means, from a corresponding counting means and from any of the subsequent and preceeding comparing means, occurs.

3,879,728

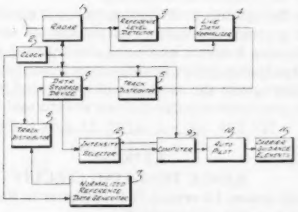
DIGITAL MAP MATCHING

Hanns H. Wolff, Matawan, N.J., assignor to Maxson Electronics Corporation, New York, N.Y.

Filed Mar. 13, 1959, Ser. No. 799,267

Int. Cl. G01s *7/04, 9/02;* **G06f** *15/50*

U.S. Cl. 343—5 MM **5 Claims**

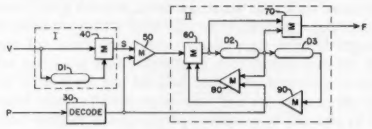


1. In a map matching system wherein a live map is compared with a reference map, the steps of dividing said maps into predetermined numbers of live and reference area elements, respectively, assigning numbers to said area elements so that the numerical difference between the numbers assigned to any two elements of a single map is the same as that between the numbers assigned to any other pair of elements of that map which have the same relative position to each other as said two elements, selecting the live elements that have a predetermined characteristic, comparing the number assigned to said selected live elements with the number assigned to predetermined reference elements which are known to have said characteristic, and determining when the numerical difference between the number assigned to one of said selected live elements and the number assigned to one of said predetermined reference elements is the same as the numerical difference between the number assigned to another of said live elements and the number assigned to another of said predetermined reference elements.

3,879,729
MOVING TARGET INDICATOR WITH MINIMUM CLUTTER INTERFERENCE

Robert Leland Nevin, New Hartford, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed July 23, 1973, Ser. No. 381,825
Int. Cl. G01s 9/42
U.S. Cl. 343—7 A 10 Claims



1. In a moving target detection system for use on a moving platform the combination comprising:

transmission means for projecting pulses of electromagnetic radiation;

scanning means operating on said transmission means to vary the direction of projection of said pulses in a repetitive scan pattern covering a field extending on at least one side of the tracking line of said platform;

means for receiving data signals reflected from objects within said field, each successive set of data signals representing the return from a different one of said radiation pulses;

a filter circuit connected to said receiving means and having at least two stages, a first of said stages being operable to generate an intermediate signal representing the difference between two successive sets of data signals, said second of said stages operating on said intermediate signal to attenuate frequency components thereof in a band centered about 0 Hz;

tuning means for varying the parameters of said filter circuit other than the parameters of said first stage to alter the overall frequency suppression characteristics of said circuit for frequencies near 0 Hz;

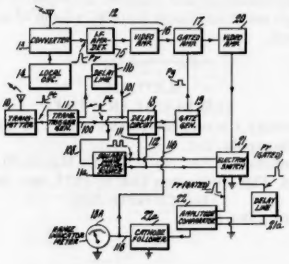
means for operating said tuning means in synchronism with said scanning means to widen the band of said suppressed near-zero frequencies as the direction of projection of said radiation pulses deviates away from said tracking line and to narrow the band of said suppressed frequencies as said projection direction closes toward said tracking line.

3,879,730
RANGE TRACKING CIRCUIT

A. Donald Arsem, Liverpool, N.Y., assignor to Radio Corporation of America, Princeton, N.J.

Filed Oct. 19, 1949, Ser. No. 122,233
Int. Cl. G01s 9/14
U.S. Cl. 343—7.3 7 Claims

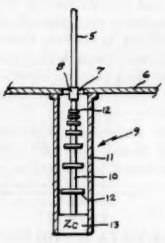
2. A pulse-echo distance determining system comprising means for transmitting a succession of pulses at a recurring frequency, means for receiving said pulses after reflection from a distant object, said receiving means consisting of a single channel that includes a gating circuit, means for producing gating pulses that recur at the same repetition rate as the received pulses but which have alternate pulses starting late in the gating pulse repetition cycle whereby there are produced early gating pulses that have a repetition rate equal to one-half the repetition rate of said received pulses and late gating pulses that have a repetition rate equal to one-half the repetition rate of said received pulses, means for applying said gating pulses to said gating circuit whereby received pulses reflected from said object appear in the output circuit of the receiving means when said received pulses and said gating pulses occur simultaneously or overlap in time, means for obtaining a control voltage that is a function of the relative amplitudes of two successive output pulses from the receiving means, and means for shifting the phase of said gating pulses as a function of said control voltage and for holding said gating pulses in an overlapped time relation with respect to the received pulses as the distance to said object changes, and means for producing an indication that is a function of the phasing of said gating pulses whereby distance to the reflecting object is indicated.



3,879,731
IMPEDANCE LOAD FOR RADAR TARGET CROSS SECTION CONTROL ELEMENT

Richard B. Mack, Winchester, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 22, 1971, Ser. No. 201,233
Int. Cl. H01g 15/14
U.S. Cl. 343—18 B 4 Claims



1. An impedance load for a radar target cross section control element comprising

a length of transmission-line terminated in its characteristic impedance,

a coupler engaging the unterminated end of the transmission-line to said control elements, and

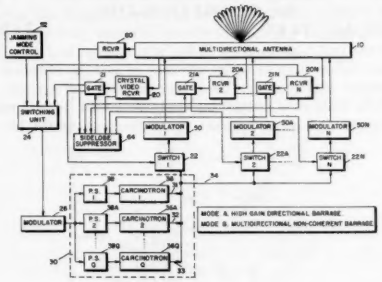
a plurality of reflecting elements disposed in spaced relationship along the transmission-line, each reflecting element being electrically tuned for maximum reflectivity at a different frequency, successive elements being spaced at increasing distances and ordered to provide maximum reflectivity at decreasing frequencies in a direction away from said coupling means.

3,879,732

MULTI-DIRECTIONAL BARRAGE JAMMING SYSTEM

Murray Simpson, Garden City, N.Y., assignor to Maxson Electronics Corporation, New York, N.Y.

Filed Apr. 28, 1959, Ser. No. 809,475
Int. Cl. H04k *3/00*
U.S. Cl. 343—18 E 8 Claims



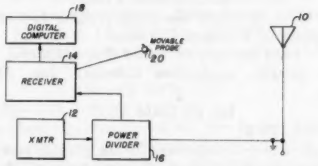
1. A jammer for radars or the like operating in a given frequency band, comprising an antenna system having an elongated radiation aperture and means for producing a multiplicity of simultaneous directional radiation beams, said means including a multiplicity of feed lines each connected so as to produce one of said beams, a plurality of fixed-tuned radio receivers each connected to one of said feed lines and having a radio frequency bandwidth sufficient to encompass said given frequency band, a transmitter for producing jamming waves having components extending throughout said given frequency band, a switching means connecting said transmitter to each feed line and responsive to the receiver connected to the same feed line, for causing said antenna system to radiate jamming waves in every direction from which signals of a predetermined amplitude are received.

3,879,733

METHOD AND APPARATUS FOR DETERMINING NEAR-FIELD ANTENNA PATTERNS

Peder M. Hansen, and John W. Rockway, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1973, Ser. No. 402,659
Int. Cl. G01r *29/10*
U.S. Cl. 343—100 AP 6 Claims



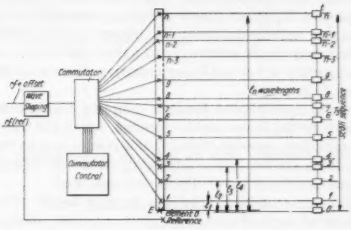
5. A method for determining far-field patterns of a complex radiating structure comprising the steps of measuring phase and amplitude in the near-field of said structure, processing the resultant measurements in digital computer apparatus to determine the impedance matrix of said structure and to invert said matrix to determine the current distribution of said structure.

3,879,734

DOPPLER RADIO NAVIGATION BEACON ANTENNA WITH WIDE AND UNEQUAL ELEMENT SPACING

Paul Barton, Bishops Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,106
Claims priority, application United Kingdom, Apr. 5, 1973, 16275/73
Int. Cl. G01s *1/38*
U.S. Cl. 343—106 D 5 Claims



1. A radio navigation beacon of the Doppler type comprising:

a fixed reference aerial for radiating energy at a first radio frequency;

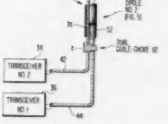
a linear array of irregularly spaced radiating elements, and means for commutating energy at a second radio frequency different from said first frequency to each of said aerials in turn so as to produce a repetitive scan sequence, said sequence being selected such that the composite radiated signal is equivalent to that which would be obtained by sampling an equivalent but hypothetical constant speed source at unequal intervals of time.

3,879,735

BROADBAND ANTENNA SYSTEMS WITH ISOLATED INDEPENDENT RADIATORS

Donn V. Campbell, Eatontown, and James Arnold, Farmingdale, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 22, 1974, Ser. No. 472,322
Int. Cl. H01q *9/16*
U.S. Cl. 343—792 12 Claims



1. A broadband antenna system for at least first and second radio apparatus adapted to operate simultaneously in relative close proximity, comprising in combination:

at least two dipole antennas, each including a pair of radiating elements, respectively coupled to said first and second radio apparatus, said antennas being mounted one above the other and having a predetermined spacing therebetween with said respective pairs of radiating elements being aligned generally along a common vertical axis;

a first transmission feedline coupling said first radio apparatus to the upper dipole antenna, running through the pair of radiating elements of said lower dipole antenna and the lower radiating element of said upper dipole antenna and additionally being configured to provide a first cable choke section adjacently below the lower radiating element of the upper dipole antenna, a second cable choke section adjacently above the upper radiating element of the lower dipole antenna, and a third cable choke section adjacently below the lower radiating element of the lower dipole antenna;

a second transmission feedline coupling said second radio apparatus to the lower dipole antenna, being fed through the lower radiating element thereof, and configured to provide a fourth cable choke section adjacently below the lower radiating element of said lower dipole antenna; and

impedance matching networks located inside of one element of each of said two dipole antennas, being respectively coupled to said first and second transmission feedlines for adjusting the impedance characteristic of the feed point of said two dipole antennas.

3,879,736

HIGH FREQUENCY-CUT FILTER FOR A PEN RECORDER

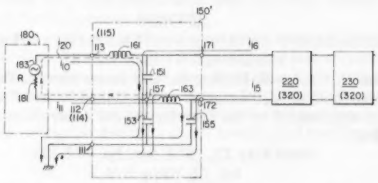
Akinobu Ryu; Takehiro Okumura, both of Okumura, Katsuta, and Yukio Yoshinari, Tojuku, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1973, Ser. No. 358,942

Claims priority, application Japan, May 10, 1972, 47-45481

Int. Cl. G01d *5/12*

U.S. Cl. 346—33 R **11 Claims**



1. In a high speed pen recorder having a recorder pen, input terminal means for receiving recording signals and carried high frequency noises from outside the recorder, amplifier circuit means connected to said input terminals means for receiving and amplifying the recording signals, and servomotor means connected to said amplifier means for receiving the amplified recording signals and connected to said recorder pen for moving the recorder pen in response to the amplified recording signals, wherein the improvement comprising: high frequency-cut filter means adjacent said input terminal means and connected between said input terminal means and said amplifier means for passing the recording signals and for removing the high frequency noises from the recording signals prior to the recording signals reaching said amplifier circuit means; and shield means preventing the transmission through space of the high frequency noises having frequency components higher than 100KHz from both said input terminal means and said high frequency-cut filter means to said amplifier circuit means, and said shield means comprising an electrically grounded metal plate extending between said amplifier circuit means and both said input terminal means and said high frequency-cut filter means to be in the path of the high frequency noises in space transmitted from said input terminal means and said high frequency-cut filter means toward said amplifier means.

3,879,737

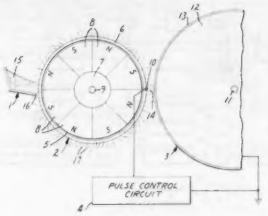
INTEGRATED ELECTROGRAPHIC RECORDING AND DEVELOPING STYLUS ASSEMBLY

George G. Lunde, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 8, 1974, Ser. No. 458,720

Int. Cl. G01d *15/06, 15/12*

U.S. Cl. 346—74 ES **7 Claims**



1. In an electrographic recording system that includes a recording electrode electrically connected to one side of a recording medium, a toner developing means having an inner rotating magnet assembly and an outer shell, a plurality of recording styli fixed on the outer shell of said developing means and spaced from the opposite side of said recording medium to define a recording region therebetween that is bridged by toner powder transported on said developing means, and electronic circuitry for providing voltage potential record pulses to said styli, each recording stylus comprising the combination of:

a magnetic portion having one end positioned radially outward from said outer shell and formed of a magnetic material such that magnetic flux provided by the magnetic field of said inner magnet assembly is concentrated at the outer end of said stylus to cause a concentration thereat of the toner; and

a nonmagnetic electrode portion positioned near said end of said magnetic portion and connected to said electronic circuitry in order that voltage potential record pulses may be applied to said electrode portion to electronically charge the toner powder bridging the recording region and produce deposition of toner on said recording medium in accordance with applied record pulses.

3,879,738

RECORDING ARRANGEMENT FOR THE GRAPHIC REPRODUCTION OF ALPHA-NUMERICAL INDICIA ON A RECORDING STRIP

Hermann Riedl, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Jan. 25, 1974, Ser. No. 436,806

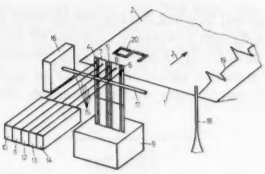
Claims priority, application Germany, Jan. 31, 1973, 2304740

Int. Cl. G01d *15/10*

U.S. Cl. 346—76 R **4 Claims**

1. In a recording arrangement for the graphic reproduction of alpha-numerical indicia on a recording strip formed of thermally sensitive paper, which is movable relative to a recorder means, comprising indicia generating means for digitalizing the indicia pursuant to seven segment-code; and means generating control impulses for the recording means for determining the time points and duration of the reproduction of the indicia segments, the improvement comprising; five segment recorder means each including a heatable stylus and being positioned transverse to the direction of movement of said recording strip, said recorder means including two exterior

and one intermediate recorder means in spaced relationship for reproducing said longitudinal lines on said recording strip, and a recorder means for reproducing transverse lines being positioned between each said exterior recorder means and said intermediate recorder means, said recorder means reproducing said indicia through mutually perpendicular longitudinally and transversely extending lines on said recording strip, said recorder means for the longitudinal lines having a writing width in conformance with the intended longitudinal line thickness, and said recorder means for the transverse lines having a writing width in conformance with the intended transverse line lengths, said styli comprising thin resilient leaf springs, stationary support means clampingly engaging one end of said leaf springs, the other ends of said leaf springs being movable relative to said recording strip; impulse transmitter means being associated with each of said segment recorder means; lifting magnets associated with each of said styli, said lifting magnets being energized through impulses



generated by said impulse transmitter means for imparting movement to said styli relative to said recording strip, said impulse transmitter means each including an impulse generator for generating base impulses having lengths in correspondence with the reproduction width of an indicia; and monostable stepping oscillator means generating inpulses adapted to be superimposed on said base impulses, the time point and duration of the reproduction of the respective segments of an indicia being dependent upon the lengths and occurrence time points of said superimposed impulses, logic interconnecting elements operatively connecting said impulse generators and said monostable stepping oscillators for generating pulses pressing said recorder means against said recording strip at each coincidence of the impulses of said impulse generators and said stepping oscillators; and a control installation operatively connected to said impulse transmitter means for controlling the latter to effect pressing of said recorder styli against said recording strip with respect to successive segments of the indicia being recorded.

3,879,739

VEHICLE TRIP RECORDER

Hans Zimmermann, Villingen-Schwenningen, and Helmut Müller, Saint Georgen, both of Germany, assignors to Kienzle Apparate GmbH, Villingen, Black Forest, Germany

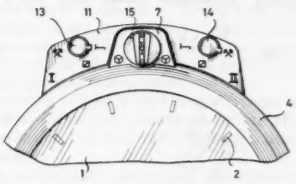
Filed June 12, 1974, Ser. No. 478,822

Claims priority, application Germany, June 14, 1973, 2330227

Int. Cl. G07c *5/12*

U.S. Cl. 346—146 **7 Claims**

1. In a vehicle trip recorder of the type having a housing, a recording arrangement in said housing which scribes a record indicative of vehicle utilization, an adjusting arrangement for adjusting said recording arrangement to operate in one or another operative mode thereof, and a cover for said housing which can be latched, an improvement comprising cooperating latching portions on said cover and said housing and being engageable for latching said cover; and actuating means accessible exteriorly of said cover and being operative in the latched condition of the latter for displacing some of said latching portions in the engaged condition of the same between two control positions in each of which they operate upon said adjusting arrangement to effect adjustment of said



recording arrangement to one of said operative modes thereof.

3,879,740

LIGHT-MEASURING SYSTEMS

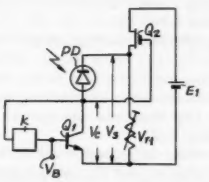
Chiharu Mori, and Shoji Kamasako, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 4, 1973, Ser. No. 366,485

Claims priority, application Japan, June 9, 1972, 47-68351[U]

Int. Cl. G01j *5/30;* **G03b** *7/08*

U.S. Cl. 354—24 **10 Claims**

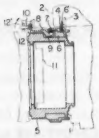


1. In a light-measuring system, photosensitive means for producing, when receiving light, a photovoltaic effect in the form of a photocurrent the magnitude of which is indicative of the magnitude of the illumination received by said photosensitive means, logarithmic compression means electrically connected to one side of said photosensitive means for receiving said photocurrent and providing a logarithmically compressed output in the form of a voltage the magnitude of which is indicative of the magnitude of the illumination received by said photosensitive means, a voltage source means for energizing said photosensitive means and logarithmic compression means, and source follower circuit means connected across the photodiode and including at least one FET having its source and drain electrically connected across said voltage source means, its gate coupled to the interconnection between said one side of said photosensitive means and said logarithmic compression means and its source coupled to the other side of said photosensitive means, said FET having a circuit characteristic for providing approximately zero voltage across said photosensitive means.

3,879,741
INTERMEDIATE RING FOR INTERLOCKING AN APERTURE RING WITH AN EXPOSURE METER

Yutaka Saito, Koganli and Kunihiro Fukino, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 393,820
Claims priority, application Japan, Sept. 26, 1972, 47-11091
Int. Cl. G03b 7/20
U.S. Cl. 354—46 5 Claims



1. An intermediate ring assembly for insertion between a camera body containing an exposure meter and having a meter interlocking member coupled to said exposure meter and an interchangeable lens having an aperture ring and an aperture-ring interlocking member secured to said aperture ring for connection with said meter interlocking member when the interchangeable lens is mounted on the camera body, said intermediate ring assembly comprising:

an intermediate ring body having a first coupling portion adapted for connection with said camera body and a second coupling portion adapted for connection with the interchangeable lens;

a rotatable ring rotatably mounted on the intermediate ring body;

a first interlocking means secured to the rotatable ring for connection with the meter interlocking member when the intermediate ring body and the camera body are connected together; and

a second interlocking means supported on the rotatable ring and movable with respect thereto for engaging the aperture-ring interlocking member when the intermediate ring body and the interchangeable lens are connected together, said second interlocking means being biased toward the axis of rotation of the rotatable ring, and being movable away from said axis of rotation.

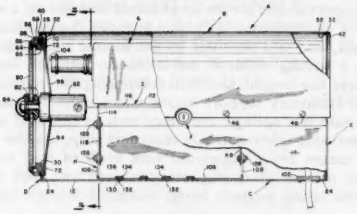
2. An intermediate ring assembly as set forth in claim 1, wherein the second interlocking means is pivotably mounted on the rotatable ring and is pivotable about a second axis.

3,879,742
WEATHER-PROOF ENCLOSURE FOR VIDEO CAMERA OR THE LIKE HAVING CENTRIFUGAL ACTION WINDOW CLEANER

Jessop Smith, Gates Mills, Ohio, assignor to Triple-S Development Co., Inc., Wickliffe, Ohio

Filed Oct. 15, 1973, Ser. No. 406,223
Int. Cl. G03b 17/08
U.S. Cl. 354—64 4 Claims

1. An enclosure for a surveillance device, comprising; a housing having separable upper and lower housing parts and a front end, a transparent window rotatably mounted at said front end, drive means for rotating said window at a high angular velocity, adjustable mounting means in said lower housing part for mounting a surveillance device at selected elevations for surveillance through said window, said lower housing part having a substantially flat bottom wall and opposite sidewalls extending outwardly and upwardly therefrom, said adjustable mounting means including a first bracket secured to said bottom wall and having upstanding first bracket

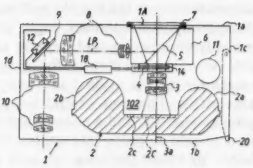


flanges, a second bracket having downwardly extending second bracket flanges releasably clamped to said first bracket flanges for selectively positioning said second bracket at a plurality of selective elevations relative to said bottom wall, and bracket spacer plate means releasably clamped to said flanges.

3,879,743
MINIATURE STILL CAMERA WITH VIEWFINDER

Richard Wick; Alfred Winkler, both of Munich, and Peter Lermann, Narring, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 19, 1973, Ser. No. 371,567
Claims priority, application Germany, June 27, 1972, 2231414
Int. Cl. G03b 19/04
U.S. Cl. 354—225 10 Claims



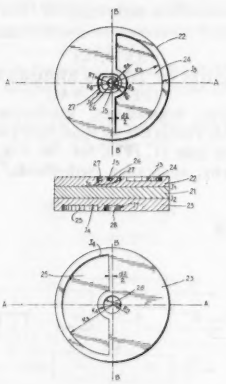
1. A still camera, comprising a housing having a front wall provided with a light-admitting opening, a rear wall, and two side walls; a film container removably installed in said housing and having a first section adjacent to one of said side walls, a second section spaced apart from said side walls, and an intermediate section located between said first and second sections adjacent to said rear wall and having a window facing said opening of said front wall, one of said first and second sections being arranged to store a supply of unexposed film and the other of said first and second sections being arranged to store exposed film frames, said first and second sections extending beyond said intermediate section toward said front wall and defining in front of said window and behind said opening a chamber which is open toward said front wall; a base objective at least partially extending into said chamber; a viewfinder having an eyepiece mounted in said housing between said second section of said container and the other of said side walls and optical elements for directing into said eyepiece some of the light which is admitted into said housing by way of said opening, said optical elements including a first mirror located between said objective and said opening and having a surface making with the axis of said objective an angle of 45

degrees, and a second mirror adjacent to said other side wall in front of said eyepiece and having a surface parallel to and facing said surface of said first mirror, each of said mirrors being partially light-reflecting and partially light-transmitting so that a first portion of light which is admitted by way of said opening can reach said objective through said first mirror and a second portion of light which is admitted by way of said opening is deflected by said first mirror against said surface of said second mirror, said second mirror transmitting a first part of said second portion of light and deflecting a second part of said second portion of light into said eye-piece; and exposure control means including photosensitive transducer means installed in said housing behind said second mirror so as to be exposed to said first part of said second portion of light.

3,879,744
BIDIRECTIONAL THYRISTOR

Guy H. Dumas, Paris, France, assignor to Silec-Semi-Conducteurs, Paris, France

Continuation-in-part of Ser. No. 268,944, July 5, 1972, abandoned. This application Nov. 27, 1973, Ser. No. 419,465
Claims priority, application France, July 6, 1971, 71.24729
Int. Cl. H01l *11/10*
U.S. Cl. 357—39 **8 Claims**



1. In a bi-directional gate controlled semiconductor device of the type having first and second main electrodes and a gate electrode and comprised of a single semi-conductor body having a geometrical axis of symmetry and first and second parallel surfaces perpendicular to said axis of symmetry, said semi-conductor body including an n-type inner layer between first and second p-type outer layers defining said first and second surfaces, respectively, and forming first and second p-n junctions, respectively, with said n-type inner layer, the improvement comprising:

a. first, second and third separate n^+-type diffused layers on said first p-type outer layer forming third, fourth and fifth p-n junctions, respectively, with said first p-type outer layer,

1. said first n^+-type layer having a substantially semi-circular shape defined by two semi-circles of first and second radii, where said first radius is greater than said second radius, said first n^+-type diffused layer being situated on one side only of a diametrical plane perpendicular to said first and second surfaces,

2. said second n^+-type layer being C-shaped substantially centered on the axis of symmetry of the device and opening towards said first n^+-type layer, and

3. said third n^+-type layer completely surrounding said second n^+-type layer,

b. fourth and fifth separate n^+-type diffused layers on said second p-type outer layer forming sixth and seventh p-n junctions, respectively, with said second p-type outer layer,

1. said fourth n^+-type layer having a substantially semi-circular shape defined by two semi-circles of said first and second radii, said fourth n^+-type layer being situated on the other side only of said diametrical plane opposite said first n^+-layer, and

2. said fifth n^+-type layer having the shape of a disc with a third radius and centered on the axis of symmetry of the device, said third radius being less than said second radius,

c. first, second, third, fourth and fifth ohmic contacts disposed on the semi-conductor device,

1. said first ohmic contact consisting of metallization over said entire second surface, said first ohmic contact forming one of said first and second main electrodes,

2. said second ohmic contact consisting of a circular metallization on said first surface and having an outer radius greater than said first radius and a inner radius greater than said second radius, said second ohmic contact forming the other of said first and second main electrodes,

3. said third ohmic contact consisting of a metallization on said first surface in the shape of a disc centered on the axis of symmetry of the device and having a diameter smaller than the diameter of said second n^+-type layer, said third ohmic contact forming said gate electrode,

4. said fourth ohmic contact consisting of a metallization on said first surface having the shape of a part of a ring situated on the same side of said diametrical plane as said first n^+-type layer and covering part of said fifth p-n junction on the outer edge of said third n^+-type layer, and

5. said fifth ohmic contact consisting of a metallization on said first surface having the shape of a part of a ring and situated on the side of said diametrical plane opposite said first n^+-type layer and covering part of said fifth p-n junction on the inner edge of said third n^+-type layer.

3,879,745
SEMICONDUCTOR DEVICE

Poothathamby Tharmaratnam, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 288,919, Sept. 14, 1972, abandoned, which is a continuation of Ser. No. 86,517, Nov. 3, 1970, abandoned. This application Feb. 19, 1974, Ser. No. 443,258
Claims priority, application Netherlands, Nov. 11, 1969, 6916987
Int. Cl. H01l *19/00*
U.S. Cl. 357—44 **9 Claims**

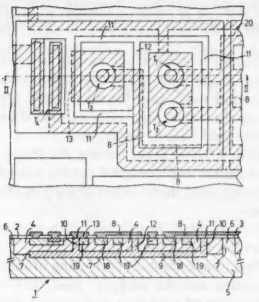
1. A semiconductor device comprising:

a. a semiconductor body comprising a first region of a first conductivity type adjoining a surface of said body;

b. a plurality of lateral transistors disposed in said first region and individually comprising surface emitter and collector zones of a second conductivity type and further comprising respective base zones of said first conductivity type, said emitter, base, and collector zones being disposed in said first region;

c. a highly doped zone of said first conductivity type disposed in said first region and having a higher conductance than the part of said first region located between said lateral transistors and substantially entirely surrounding in said body each of said plurality of lateral transistors, said highly doped zone comprising a part at least substantially adjoining said surface at areas of said surface that

surround said lateral transistors and said highly doped zone electrically interconnecting said base zones; and



d. means for electrically interconnecting said emitter zones, whereby the emitter currents of said lateral transistors have a substantially fixed ratio.

3,879,746

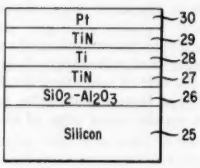
GATE METALLIZATION STRUCTURE

Paul Richard Fournier, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Division of Ser. No. 258,072, May 30, 1972, Pat. No. 3,798,145. This application Dec. 17, 1973, Ser. No. 425,504

Int. Cl. H01l *5/00*

U.S. Cl. 357—71 **1 Claim**



1. A gate metallization structure for an insulated gate field effect transistor which comprises a substrate of silicon having a first dielectric layer of silicon dioxide formed on a surface of the substrate, a second dielectric layer of aluminum oxide formed on the surface of the first dielectric layer, and a metal pattern formed on the surface of the aluminum oxide layer, characterized in that said metal pattern comprises seccessively titanium nitride, titanium, titanium nitride and platinum.

3,879,747

REMOTE CONTROL DEVICE

Yoichi Sakamoto, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 194,998, Nov. 2, 1971. This application Aug. 29, 1972, Ser. No. 284,556

Claims priority, application Japan, Dec. 4, 1968, 43-88865

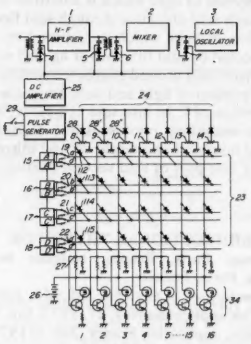
Int. Cl. H04b *1/26*

U.S. Cl. 358—1 **7 Claims**

1. A remote control device comprising a reversible binary counter whose operation can be remotely controlled;

a binary to *n* output decoder having a plurality of binary input terminals coupled to corresponding outputs of said reversible counter and a plurality of *n* output terminals, one of said output terminals being selected in correspondence with a binary output signal from said counter;

a plurality of preset elements connected respectively with said plurality of *n* output terminals, each of said preset elements comprising variable resistors connected respectively to said plurality of *n* output terminals to produce a predetermined control voltage at said selected one of said output terminals;



a device whose operation is controlled by said control voltage obtained from said selected output; and means for remotely controlling said reversible binary counter.

3,879,748

COMPENSATION OF TIMING ERRORS IN A COLOR VIDEO SIGNAL

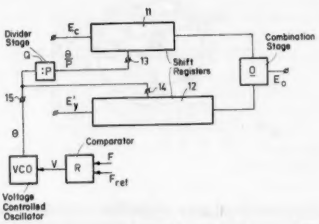
Jacob De Boer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 11, 1973, Ser. No. 378,266

Claims priority, application Netherlands, July 26, 1972, 7210324

Int. Cl. H04n *5/76*

U.S. Cl. 358—8 **4 Claims**

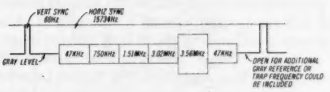


1. A device for the compensation of timing errors in a color video signal which is derived from a record carrier, specifically a color video signal whose chrominance information and luminance information are recorded on the record carrier in two different frequency bands, the device comprising a variable delay line which consists of a shift register, the shift register comprising a group of series-connected elements, the transfer of information from one element to the next being controlled by a variable frequency clock signal which is applied to a clock input of the shift register and whose frequency is determined by a control signal, which is obtained by comparing a synchronizing signal which is in synchronism with the color video signal and a reference signal, the improvement wherein the device comprises a first and a second shift register, means for transforming the information in the upper one of the two frequency bands to a lower frequency band means for applying the chrominance information to the first shift register, means for applying the luminance information to the second shift register, and means for deriving the clock signals for the two shift registers from said control signal.

3,879,749
TV TEST PATTERN AND METHOD OF TESTING

Robert E. Baum, Dell Rapids, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Filed Aug. 20, 1973, Ser. No. 389,732
Int. Cl. H04n *9/00*
U.S. Cl. 358—10 **10 Claims**



1. A test pattern generator for use in determining operating characteristics of a color television receiver,

means for providing a first signal having a frequency substantially equal to the standard subcarrier frequency,

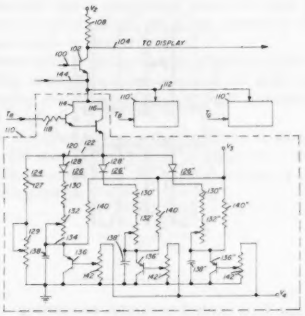
means for providing a plurality of video signals within the I.F. response band of said television receiver, and

means for combining said first signal and said video signals to provide a single wave form made up of discrete time displaced bands in which said video signals all have the same amplitude and said first signal has an amplitude twice that of said video signals.

3,879,750
TONE CORRECTION APPARATUS FOR COLOR ANALYZERS

Thomas G. Seckel, Rochester, and Edward M. Waz, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 18, 1974, Ser. No. 434,720
Int. Cl. H04n *9/02*
U.S. Cl. 358—76 **11 Claims**



1. A color analyzer adapted to receive a photographic original comprising:

apparatus for scanning such a photographic original received by the analyzer to produce a series of signals bearing information of tone values for a repeating sequence of colors;

means cooperating with said scanning means for producing synchronizing signals in timed relationship to production of said tone signals;

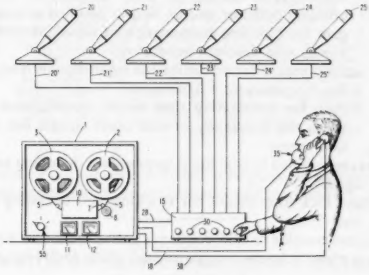
signal processing means for receiving and operating upon the tone value signals produced by the scanning apparatus, said signal processing means including tone correction apparatus, responsive to said synchronizing signals, which modifies the tone value signals according to individualized nonlinear relationships as a function of corresponding color; and

display apparatus for receiving the tone value signals which have been operated upon by the signal processing means and for producing a visual display based thereon.

3,879,751
COURT REPORTING DICTATING SYSTEM AND METHOD

Joseph Julius Gimelli, 8320 W. Boulevard Dr., Alexandria, Va. 22308

Filed Jan. 5, 1973, Ser. No. 321,270
Int. Cl. G11b *27/36, 15/10, 5/86*
U.S. Cl. 360—13 **2 Claims**

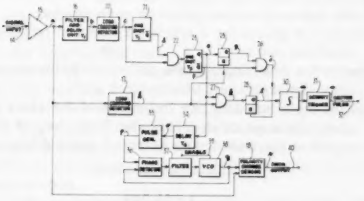


1. A recording-dictation method particularly adapted to court reporting and like techniques wherein a written transcript is prepared comprising the steps of recording upon one channel of a magnetic tape audio from at least one audio pick-up station, immediately dictating a constructed version of said audio upon another channel of said tape, optionally selecting one or the other of said channels for immediate playback of said audio or said constructed version to thereby monitor said recording continuously or intermittently to assure that there is no malfunction in the equipment, and typing said transcript from said constructed version.

3,879,752
COMBINED SECTOR PULSE AND DATA DETECTION SYSTEM

Robert F. Heidecker, Longmont, Colo., assignor to Iomec, Inc., Santa Clara, Calif.

Filed Apr. 4, 1974, Ser. No. 457,863
Int. Cl. G11b *5/09*
U.S. Cl. 360—40 **8 Claims**



1. A sector identification and data detector system comprising:

an input terminal adapted to receive an input signal train bearing sector identification and data signals, said sector signals having a frequency f_S greater than the frequency f_D of said data signals;

frequency gating means coupled to said input terminal for generating a sector identification signal in response to the receipt thereof of signals lying in the range $f_S \pm \Delta f_S/2$ where Δf_S is a predetermined permitted frequency deviation, said frequency gating means including:

a first delay unit coupled to said input terminal for delaying said input signals by a first interval t_1, and a first zero crossing detector coupled to said first delay unit for generating an output pulse in response to a change of polarity of the signals input thereto;

first means for screening out input signals lying below the frequency $f_N - \Delta f_N/2$, said first screening means including an AND gate having a first input coupled to the output of said zero crossing detector, and a first monstable multivibrator having a time-out interval t_2, said multivibrator having an input coupled to said zero crossing detector and an output coupled to said AND gate for blocking transmission of signals therethrough during said time-out interval t_2;

second means for screening out input signals lying above the frequency $f_N + \Delta f_N/2$; and

means for terminating said sector identification signal when the frequency of said input signals lies outside said range;

means coupled to said input terminal for decoding said data signals;

phase lock loop means for clocking said decoding means; and

means coupled to said frequency gating means for supplying a phase reference signal to said phase lock loop means.

3,879,753

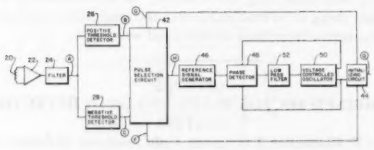
PHASE LOCKED LOOP CLOCKING SYSTEM

David S. Dunn, Windham, N.H., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 2, 1974, Ser. No. 430,375

Int. Cl. G11b *5/00*

U.S. Cl. 360—51 **24 Claims**



1. A phase locked loop clocking system for phase locking a clock signal with respect to an input signal consisting of a series of dipulses wherein each dipulse consists of two oppositely signed pulses, said phase locked loop clocking system comprising:

means for detecting a point occurring between the peaks of the first and second pulses of each dipulse;

means for generating a reference signal in response to the detected points;

means for detecting a phase difference between said reference signal and said clock signal; and

means for controlling the frequency of the clock signal so as to increase or decrease the frequency of the clock signal in response to the detected phase difference.

3,879,754

MAGNETIC FIELD PRODUCING APPARATUS

Dale O. Ballinger, Denver, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 29, 1973, Ser. No. 420,284

Int. Cl. G11b *5/02, 5/112;* **H01f** *13/00*

U.S. Cl. 360—56 **4 Claims**

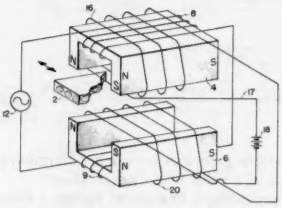
1. A magnetic field producing apparatus comprising a first U-shaped core member;

a second U-shaped core member, said first core member having leg end faces spaced a predetermined distance from confronting leg end faces of said second core member;

a first winding wound on the trough of said first core member;

a second winding wound on the trough of said second core member;

a first energizing means arranged to serially energize said first and second windings;



a third winding wound around said first core member at right angles to said first winding;

a fourth winding wound around said second core member at right angles to said second winding, and

a second energizing means arranged to serially energize said third and fourth windings.

3,879,755

TAPE FEED CONTROL APPARATUS

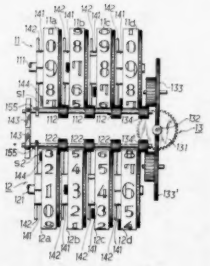
Moriaki Toyoda, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed May 7, 1974, Ser. No. 467,720

Claims priority, application Japan, May 21, 1973, 48-57001

Int. Cl. G11b *15/18, 27/14, 27/20*

U.S. Cl. 360—72 **11 Claims**



1. A tape feed control apparatus comprising

a. a first rotating means which rotates in accordance with feeding of a tape in a direction which is changed over to an opposite direction when said tape is changed over from forward feed to reverse feed and from reverse feed to forward feed,

b. a second rotating means which rotates in accordance with feeding of a tape in a direction which is changed over to an opposite direction when said tape is changed over from forward feed to reverse feed and from reverse feed to forward feed,

c. a first resetting means which resets said first rotating means to a specified position independently of said second rotating means,

d. a second resetting means which resets said second rotating means to a specified position independently of said first rotating means,

e. a first signal generating means which generates a signal when said first rotating means rotates exceeding the resetting position from any direction,

f. a second signal generating means which generates a signal when said second rotating means rotates exceeding the resetting position from any direction,

g. a tape feed direction control circuit which sets alternatively an operation mode for which a forward feed signal to perform forward feed of the tape is generated and an operation mode for which a reverse feed signal to perform reverse feed of the tape is generated,

h. a tape speed control circuit which sets alternatively a fast feed mode to generate a fast feed signal for fast feed of a tape and a reverse feed mode to generate a reverse feed signal for reverse feed of a tape,

i. a fast forward switch which triggers said tape feed direction control circuit so that said tape feed direction control circuit comes in a forward feed mode and triggers said tape speed control circuit so that said tape speed control circuit comes in a fast feed mode,

j. a fast reverse switch which triggers said tape feed direction control circuit so that said tape feed direction control circuit comes in a reverse feed mode and triggers said tape speed control circuit so that said tape speed control circuit comes in a fast feed mode,

k. a coupling means which transmits a signal from said first signal generating means to said tape feed direction control circuit to change over said tape feed direction control circuit from a reverse feed mode to a forward feed mode and transmits a signal from said second signal generating means to said tape feed direction control circuit to change over said tape feed direction control circuit from a forward feed mode to a reverse feed mode,

i. a fast feed direction memory circuit which memorizes the latest operations of said fast forward switch and fast reverse switch and controls said coupling means to prevent said coupling means from transmitting the signal of said first signal generating means to said tape feed direction control circuit when the operation of the fast forward switch is memorized and from transmitting the signal of said second signal generating means to said tape feed direction control circuit when the operation of the fast reverse switch is memorized,

m. a memorizing means which is triggered each time said coupling means transmits signals from both said signal generating means to said tape feed direction control circuit, and

n. a tape stopping means which operates to stop the tape when said memorizing means is triggered at the second time subsequently with the signal from one of said signal generating means.

3,879,756

AUTOMATIC DRIVE STOP CONTROL UTILIZING MOTOR VOLTAGE TRANSIENTS

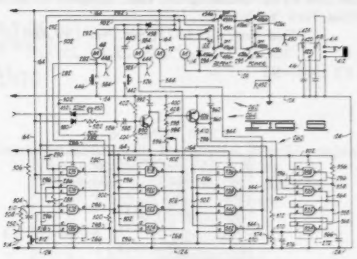
Lawrence R. De Bell, Bethany, and David D. Price, Jr., Oklahoma City, both of Okla., assignors to The Economy Company, Oklahoma City, Okla.

Filed Mar. 13, 1973, Ser. No. 340,706
Int. Cl. G11b *15/18; B65h 25/00, 59/38*
U.S. Cl. 360—74 **12 Claims**

1. In record transport apparatus wherein continuous record medium is moved past a transducing position for operative contact with a transducing head, the transport including an electric source and a drive motor energizable to move said record medium, apparatus improvements comprising:

means to sense voltage transients in said elect source energizing said drive motor and responsive thereto a varying output signal proportional to the rotational speed of said drive motor;

circuit means receiving said output signal and generating a control voltate indication when said output signal is less than a preselected threshold value; and



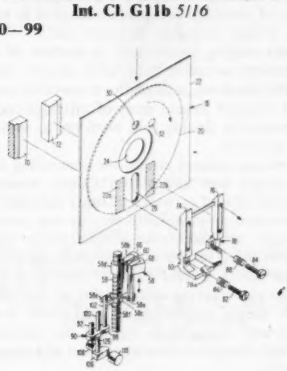
control circuit means controlled in response to said control voltage indication to de-energize said drive motor.

3,879,757

DATA STORAGE MECHANISM HAVING A FLEXIBLE MAGNETIC DISK

James Francis Elliott, Rochester, and Joel Swenum Johnson, Millville, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 1, 1974, Ser. No. 447,454
Int. Cl. G11b *5/16*
U.S. Cl. 360—99 **4 Claims**



1. A magnetic storage device comprising a thin flexible magnetic disk,

means for rotating said disk,

a first pair of spaced pressure pads located at a first face of said disk and a second pair of spaced pressure pads located at the second face of said disk and disposed oppositely with respect to said first pair of pressure pads,

means for holding said first and second pairs of pressure pads fixed with respect to each other so that they grip said magnetic disk,

a pair of magnetic heads located opposite each other and at opposite faces of said disk and each magnetic head being disposed between said pressure pad at the face of the disk at which the magnetic head is located,

a carriage for connecting said magnetic heads together so that they move together, and

means for moving said carriage to bring one or the other of said magnetic heads into forceful contact with a face of said disk with the disk being held from movement against the action of the head being moved into contact with a face of the disk by said pair of pressure pads located at the opposite face of said disk whereby these pressure pads hold the disk onto and around said head and whereby the head has a firm data transferring contact with said disk.

3,879,758

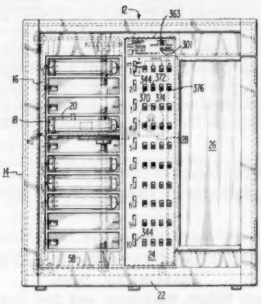
TAPE CARTRIDGE CHANGER WITH SELECTIVE CARTRIDGE AND TRACK PROGRAMMING CONTROLS

Gerald Dee Pyles, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,484

Int. Cl. G11b *21/08, 23/10, 23/12*

U.S. Cl. 360—92 **12 Claims**



1. A tape cartridge changer comprising:

an array of cartridge receptacles adapted to receive a plurality of tape cartridges to be played;

a changer playing mechanism, a portion of said playing mechanism including tape drive means mounted on a movable platform, said platform movable along a path of travel adjacent to said array of cartridge receptacles;

drive means for driving said platform to move along said path of travel;

a drive means control circuit for controlling the energization of said tape and platform drive means to provide operation of said cartridge changer between a first mode of operation automatically playing said plurality of tape cartridges and thereafter de-energizing said tape and platform drive means thereby totally de-energizing said changer and a second mode of operation automatically repetitively replaying said plurality of tape cartridges; and

switch means connected to said drive means control circuit and operable to control the operation of said cartridge changer between said first and second modes of operation.

3,879,759

MAGNETIC TAPE HEAD INDEXING MECHANISM WITH SINGLE ARMATURE SPRING

Seiji Matsui; Yasukatsu Fujinaka, and Yoshiaki Yabuno, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan

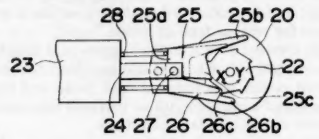
Filed May 14, 1973, Ser. No. 360,062

Claims priority, application Japan, May 15, 1972, 47-57162

Int. Cl. G11b *5/56*

U.S. Cl. 360—106 **3 Claims**

1. A magnetic head indexing mechanism for use in a cartridge-type tape player adapted to receive and play tape cartridges having a multi-track tape therein and including a cam having a plurality of different cam surfaces, each one of which is associated with a different track on the tape and a cam follower in engagement with the cam for positioning the magnetic tape head, comprising a device for rotating the cam to position a different cam surface in contact with a cam follower with the playing of one of the different tracks on the tape, thereby automatically positioning the magnetic tape head to play a different track of the multi-track tape, said device including a solenoid unit having an armature movable between an extended position and a retracted position, only one spring element mounted on said armature, ratchet wheel coupled to the cam for rotation together with said cam, and first and second pawl members pivotally mounted on said armature in spaced relation with respect to each other with said ratchet wheel accommodated in the space between said first and second pawl members, said first and second pawl members being biased about the common pivot on the armature by said spring element in opposite directions towards



each other, said first pawl member having a finger integrally formed therewith for sliding engagement with said ratchet wheel, thereby to prevent counter-rotation of said ratchet wheel, said second pawl member having a nail portion and an actuating portion both integrally formed therewith, and said first and second pawl members being in cooperative relation with respect to each other for rotating the ratchet wheel in one predetermined direction upon reciprocal movement of the armature.

3,879,760

MAGNETIC TRANSDUCERS

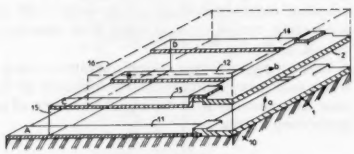
Jean-Pierre Lazzari, Villiers Saint Frederic, France, assignor to Compagnie Internationale pour l'Informatique, Louveciennes, France

Filed Feb. 22, 1974, Ser. No. 445,304

Claims priority, application France, Feb. 27, 1973, 73.06826

Int. Cl. G11b *5/38*

U.S. Cl. 360—113 **2 Claims**



1. Magnetic transducer comprising the combination of:

a first layer of anisotropic magnetoresistive magnetic material,

a second layer of anisotropic magnetoresistive magnetic material,

an intervening layer of insulating non-magnetic material magnetostatically coupling the said first and second magnetic layers,

a pair of electrical terminals connected to opposite ends of the first layer for application thereto of an electrical current the direction of flow of which substantially parallels the greater dimension of said layer,

a pair of electrical terminals connected to opposite ends of the second layer for application thereto of an electrical current the direction of flow of which substantially parallels the greater dimension of said layer,

means for summing the outputs of the voltage drops across the terminals of the said first and second layers,

said first and second layers being of identical geometry and each having an easy axis of magnetization of substantially 45° slant with respect to the said greater dimension, said axes of the said layers being relatively displaced by substantially 90° from the first layer to the second one.

DESIGNS

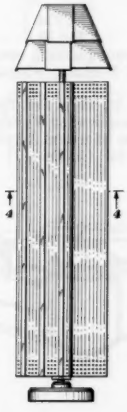
APRIL 22, 1975

234,928
FOOT ORNAMENT
Bertram A. Tunnell, 409 W. Lancaster Ave., Haverford, Pa. 19041
Filed Apr. 5, 1973, Ser. No. 348,137
Term of patent 3½ years
Int. Cl. D2—*04*
U.S. Cl. D2—270

234,929
RUBBER BOOT
Otto Schneider, Gullmo, Vollene, Askim, Norway
Filed Dec. 18, 1972, Ser. No. 315,888
Claims priority, application Norway June 16, 1972
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—275

234,930
SHOE SOLE
Alexandar Arambasic, Sao Paulo, Brazil, assignor to Space Walkers, Inc., New York, N.Y.
Filed Dec. 1, 1972, Ser. No. 311,364
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

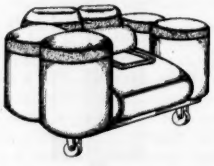
234,931
DISPLAY STAND
Harry Rogove and Roslyn Rogove, Bayside, N.Y., assignors to Remember When Sweet Shoppe, Inc., Valley Stream, N.Y.
Filed June 22, 1973, Ser. No. 372,596
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—25



234,932
TABLE
Duncan P. Burke, 3300 De La Falaise, Apt. 402, Montreal 301, Quebec, Canada, and Maurice P. Burke, Chalet Ahorn, 3780 Gstaad, Switzerland
Filed Jan. 17, 1973, Ser. No. 324,479
Claims priority, application United Kingdom July 19, 1972
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27

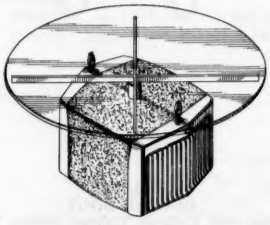
234,933
STOOL
Duncan P. Burke, 3300 De La Falaise, Apt. 402, Montreal 301, Quebec, Canada
Filed Jan. 17, 1973, Ser. No. 324,480
Claims priority, application United Kingdom July 19, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32

234,934
CHAIR
Maija Ruoslahti, Espoo, Finland, assignor to Kalustekiila Kommanditiyhtio Mitikka, Moisionkatu, Lahti, Finland
Filed May 31, 1973, Ser. No. 365,721
Claims priority, application Finland Dec. 19, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67

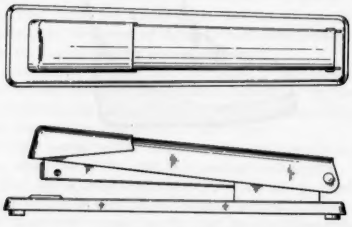


234,935
FOLDING CHAIR
Jean-Paul Dranssart, Isere, France, assignor to Allibert Exploitation, Puteaux, Hauts-de-Seine, France
Filed July 23, 1973, Ser. No. 381,595
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75

234,936
COFFEE TABLE
Gary J. George, 5174 Library Road, Bethel Park, Pa. 15102
Filed May 14, 1973, Ser. No. 359,666
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



234,937
STAPLER
Nathaniel M. Olney, New York, and John J. Power, Westbury, N.Y., assignors to Swingline Inc., Long Island City, N.Y.
Filed June 8, 1973, Ser. No. 368,286
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D8—50



234,938
AUTOMATIC CLOSER FOR A SLIDING SCREEN DOOR
Luis F. Guerrero, Los Angeles, Calif. (10632 Garden Grove Ave., Northridge, Calif. 91324)
Filed Aug. 29, 1973, Ser. No. 392,627
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—203

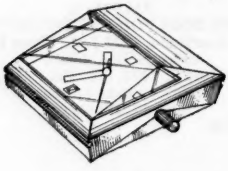
234,939
COMBINED FLASK AND COVER THEREFOR
Robert D. Hagert and James L. Sunderson, Boulder, Colo., assignors to Bota of Boulder, Boulder, Colo.
Filed Apr. 30, 1973, Ser. No. 355,746
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—63

234,940
BOTTLE
Mario Suso Mezquita, Zurbano 46, Madrid, Spain
Filed Jan. 9, 1973, Ser. No. 322,146
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—83

234,941
PACKAGING DISH FOR CANDY OR THE LIKE
Marten Gottsegen, 1212 Lake Shore Drive, Chicago, Ill. 60610
Filed July 9, 1973, Ser. No. 377,333
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—198

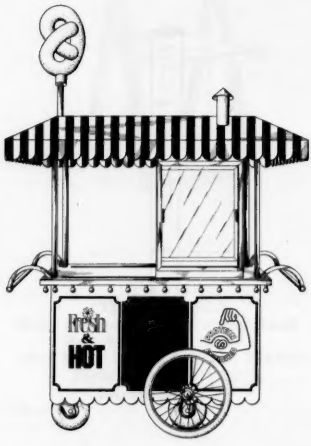
234,942
PACKAGING DISH FOR CANDY OR THE LIKE
Marten Gottsegen, 1212 Lake Shore Drive, Chicago, Ill. 60610
Filed July 9, 1973, Ser. No. 377,334
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—198

234,943
WRIST WATCH
André Le Marquand, Bulle, Switzerland, assignor to Catena S.A., Fribourg, Switzerland
Filed Apr. 5, 1973, Ser. No. 348,253
Claims priority, application Switzerland Oct. 13, 1972
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—39



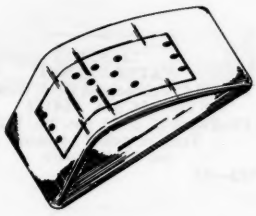
234,944
AUTOMOBILE PARKING GUIDE
James P. Todd, Bedford, Tex. (1720 Sotogrande Blvd., Apt. 368, Hurst, Tex. 76053)
Filed Oct. 26, 1973, Ser. No. 409,976
Term of patent 7 years
Int. Cl. D10—*06*
U.S. Cl. D10—110

234,945
FOOD SERVICE CART
Richard J. McCooey, 1226 36th St. NW., Washington, D.C. 20007
Filed June 26, 1973, Ser. No. 373,632
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—22

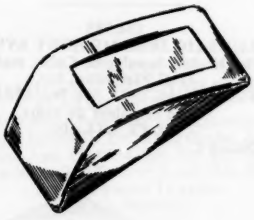


234,946
LIFTING HOOK
Henning Fredriksson, Lundgrensgatan 19 h, and Lennart Jerneskog, Hantverksgatan 2, both of S–434 00 Kungsbacka, Sweden
Filed Sept. 27, 1972, Ser. No. 292,672
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D12—54

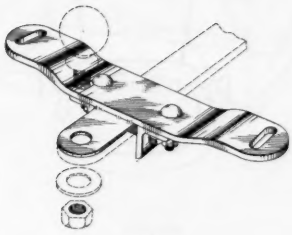
234,947
REFERENCE ELECTRODE HOUSING FOR A MARINE CATHODIC PROTECTION DEVICE
Edward P. Anderson, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Mar. 29, 1973, Ser. No. 345,870
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—155



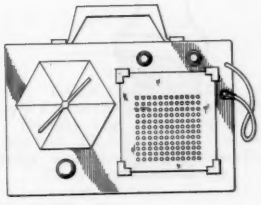
234,948
ANODE HOUSING FOR A MARINE CATHODIC PROTECTION DEVICE
Edward P. Anderson, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Mar. 29, 1973, Ser. No. 345,892
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—155



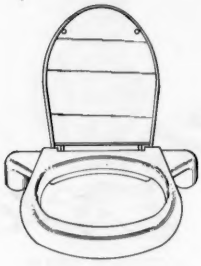
234,949
ATTACHMENT BAR FOR TRAILER HITCH BALL BRACKET
William L. Rendessy, 8028 N. 14th Place, Phoenix, Ariz. 85020
Filed July 24, 1973, Ser. No. 382,146
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



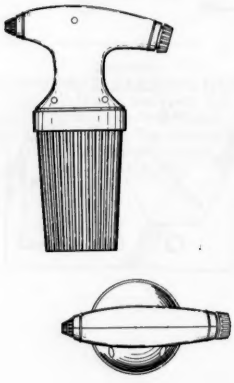
234,950
AUDIO VISUAL TEACHING UNIT
Robert E. Aumann, Rte. 1, Iron Ridge, Wis. 53035
Filed June 8, 1973, Ser. No. 368,337
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D19—60



234,951
VENTILATED TOILET SEAT
Lucien Couton, 49–51 Rue de Soissons, Casablanca, Morocco
Filed Aug. 2, 1973, Ser. No. 384,948
Claims priority, application Switzerland Feb. 5, 1973
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71

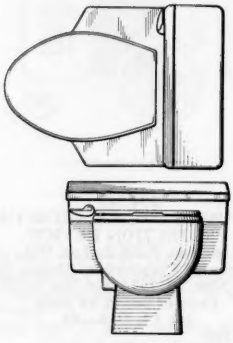


234,952
SPRAY-GUN
Pierre Rouquie, Le Chesnay, France, assignor to Etablissements et Laboratoires Georges Truffaut, Le Chesnay, France
Filed Jan. 23, 1973, Ser. No. 326,133
Claims priority, application France Aug. 28, 1972
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18

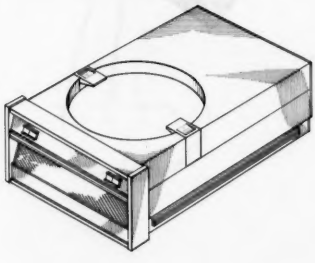


234,953
LAVATORY FAUCET HANDLE
Gerald Martin, Miami Beach, Fla. (595 NW. 91st St., Miami, Fla. 33150)
Filed Mar. 28, 1973, Ser. No. 345,563
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D23—28

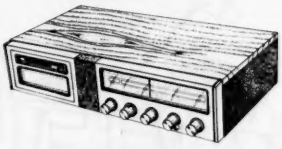
234,954
WATER CLOSET
Donald C. Schrock, 1013 N. West St., Nevada, Mo. 64772
Filed June 21, 1973, Ser. No. 372,452
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—65



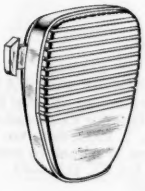
234,955
MAGNETIC DISC MEMORY SYSTEM
Charles Koster, Sepulveda, Calif., assignor to OMI Memories, Inc.
Filed Jan. 30, 1973, Ser. No. 328,037
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



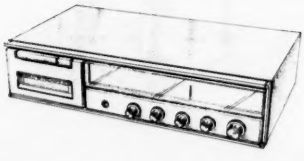
234,956
COMBINED TAPE RECORDER AND AMPLIFIER
Masamichi Yamamura, Shoun-ryo, 2–107, Yagumo-Kitamachi, Moriguchi; Katsuhiko Makino, 22–29, Choeijicho, Neyagawa; Toshimasa Akazawa, 1–94, Takayasucho Kita, Yao; Masaaki Miyamoto, Room 305, Takahashi Bldg., 1–31, Toyohide-cho, Moriguchi; and Hironosuke Koda, 1–149, Koaza Shimenoo, Ohaza Hashimoto, Yawata-cho, Tsuzuki-gun, Kyoto, all of Japan
Filed Feb. 13, 1973, Ser. No. 332,196
Claims priority, application Japan Aug. 29, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B



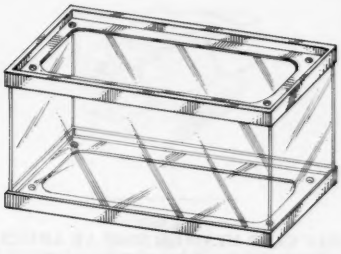
234,957
MICROPHONE
Robert R. Huntington and Seymour Paul, Lynchburg, Va., assignors to General Electric Company
Filed June 14, 1973, Ser. No. 369,899
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 J



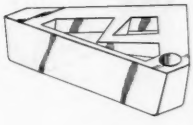
234,958
COMBINED AMPLIFIER AND CASSETTE PLAYER THEREFOR
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 17, 1974, Ser. No. 461,768
Claims priority, application Japan Oct. 22, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L



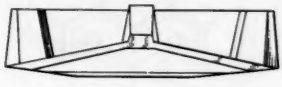
234,959
AQUARIUM TANK
Samuel Shalom, 577 Grand St., New York, N.Y. 10002
Filed Nov. 6, 1972, Ser. No. 304,235
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6



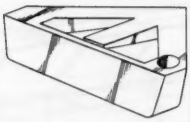
234,960
GOLF CLUB HEAD
Harold Edward Swash, 5 Bushby's Park, Formby, Lancashire, England
Filed Nov. 17, 1972, Ser. No. 307,433
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



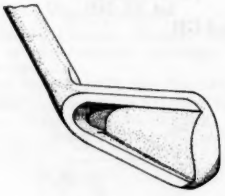
234,961
GOLF CLUB HEAD
Harold Edward Swash, 5 Bushby's Park, Formby, Lancashire, England
Filed Nov. 17, 1972, Ser. No. 307,434
Claims priority, application Great Britain Feb. 12, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



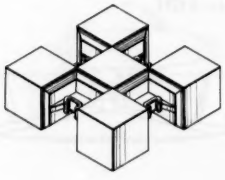
234,962
GOLF CLUB HEAD
Harold Edward Swash, 5 Bushby's Park, Formby, Lancashire, England
Filed Nov. 17, 1972, Ser. No. 307,440
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



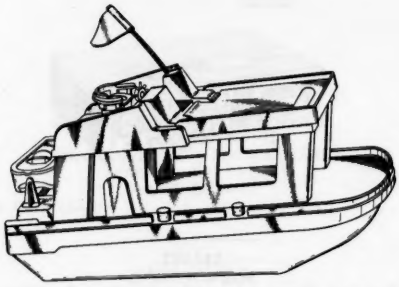
234,963
GOLF CLUB HEAD OR SIMILAR ARTICLE
Yutaka Hirata, Tokyo, Japan, assignor to J. Osawa & Co., Ltd., Tokyo, Japan
Filed Mar. 19, 1973, Ser. No. 342,363
Claims priority, application Japan Nov. 24, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



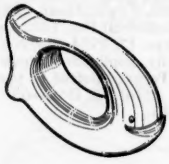
234,964
TOY CONSTRUCTION PIECE
William Kenneth Menke, 415 Park, Glendale, Mo. 63122; John A. Gale, 1050 Edgewood Hills Drive, Wayzata, Minn. 55392; and Michael D. Latta, 12945 Whitecliffe, Florissant, Mo. 63033
Filed Nov. 29, 1972, Ser. No. 310,253
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



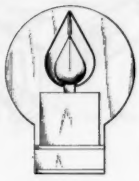
234,965
TOY HOUSE BOAT
Victor G. Reiling, Jr., East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 6, 1972, Ser. No. 312,591
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ



234,966
FISH FIGURE TOY RATTLE
Michael Langieri, Butler, and Michael R. Meyers, Munsey, N.J., assignors to Questor Corporation, Toledo, Ohio
Filed Feb. 7, 1973, Ser. No. 330,173
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AG

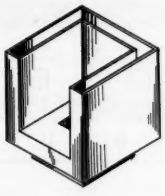


234,967
MEMORIAL ELECTRIC LIGHT
Arieh Feld, Hirsch St. 7, and Yeruham Feld, Tiberius St. 28, both of Bnei Brak, Israel
Filed Sept. 12, 1973, Ser. No. 396,631
Claims priority, application Israel Mar. 19, 1973
Term of patent 14 years
Int. Cl. D26—*05;* D11—*02*
U.S. Cl. D48—20 E

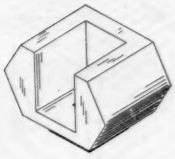


234,968
COMBINED MOLD AND PERMANENT OUTSIDE SHELL FOR EXTERIOR LIGHTING FIXTURE
Roger N. Ervin, 9647 Leaside Drive, Dallas, Tex. 75238
Filed July 19, 1973, Ser. No. 380,872
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

234,969
COMBINED MOLD AND PERMANENT OUTSIDE SHELL FOR EXTERIOR LIGHTING FIXTURE
Roger N. Ervin, 9647 Leaside Drive, Dallas, Tex. 75238
Filed July 19, 1973, Ser. No. 380,874
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

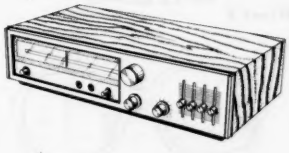


234,970
COMBINED MOLD AND PERMANENT OUTSIDE SHELL FOR EXTERIOR LIGHTING FIXTURE
Fred O. Delin, 5656 Celestial Road, Dallas, Tex. 75240
Filed July 19, 1973, Ser. No. 380,876
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

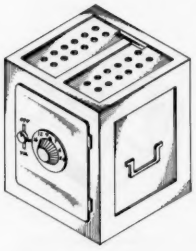


234,971
COMBINED MOLD AND PERMANENT OUTSIDE SHELL FOR EXTERIOR LIGHTING FIXTURE
Fred O. Delin, 5656 Celestial Road, Dallas, Tex. 75240
Filed July 19, 1973, Ser. No. 380,878
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

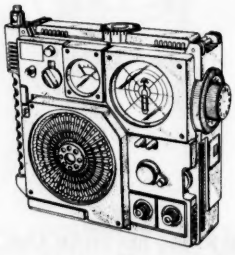
234,972
COMBINED RADIO RECEIVER AND AMPLIFIER
Kikuo Ohta, Osaka, and Masaaki Miyamoto and Shuhei Taguchi, Moriguchi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 13, 1973, Ser. No. 332,198
Claims priority, application Japan Aug. 29, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



234,973
PORTABLE RADIO
Morris Dweck, 442 Quentin Road, Brooklyn, N.Y. 11223
Filed May 14, 1973, Ser. No. 359,700
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

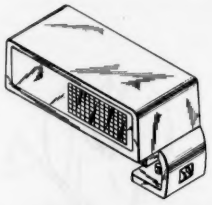


234,974
RADIO RECEIVER
Ken Kawamura, Katano, Katsuhiko Makino and Shinzo Murakami, Neyagawa, and Hironosuke Koda, Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 13, 1974, Ser. No. 442,142
Claims priority, application Japan Aug. 14, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

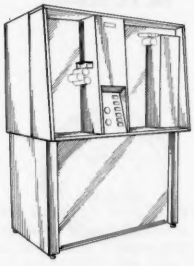


234,975
SPECTACLE FRAME FRONT
John F. Ahern, Chelmsford, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed June 24, 1971, Ser. No. 156,591
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

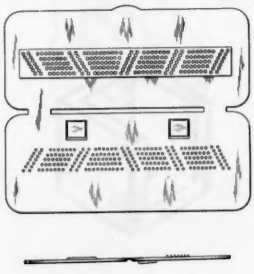
234,976
CAMERA STROBE ATTACHMENT OR THE LIKE
Sol Tiffen, 58 Midwood Cross, Roslyn, N.Y. 11576
Filed Oct. 25, 1972, Ser. No. 300,625
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D61—1 F



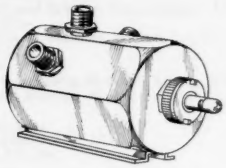
234,977
ROLL FILM DUPLICATOR
Paul Matwey, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed July 27, 1973, Ser. No. 383,395
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



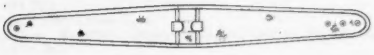
234,978
CHECK PERFORATOR
Roger Olmazu, Long Island, N.Y., assignor to Integrated Control Systems, Inc., Great Neck, Long Island, N.Y.
Filed June 8, 1973, Ser. No. 368,173
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D64—10



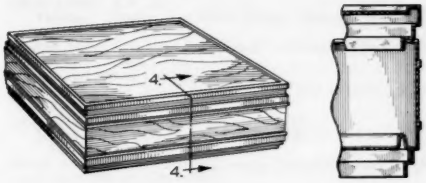
234,979
MANIFOLD FOR RESPIRATORY INHALATION SYSTEMS
Bruce B. Miller, 3417 Canfield Road, Eaton Rapids, Mich. 48827
Filed Dec. 13, 1972, Ser. No. 314,739
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 G



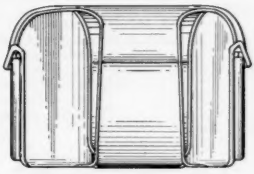
234,980
BABY BOTTLE HOLDER
Reginald M. Tomlin and Shirley C. Tomlin, both of 3102 Renker Drive, San Antonio, Tex. 78217
Filed Nov. 6, 1972, Ser. No. 303,774
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—8 R



234,981
CONTAINER FOR BOXES OF FILM SLIDES OR THE LIKE
James R. Walsh, 2 Coventry-on-Duxbury, Plum Grove Village, Rolling Meadows, Ill. 60008
Filed Oct. 6, 1972, Ser. No. 295,478
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 D



234,982
CAMERA CASE
Masakazu Tomatsuri, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Jan. 5, 1973, Ser. No. 321,223
Claims priority, application Japan Sept. 2, 1972
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D87—5 E



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF APRIL, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Smith, Richard G.; and Stewart, James K., 3,879,561.

AB Printing Equipment: *See—*
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Abar Corporation: *See—*
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Abbe, Gunther: *See—*
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Abel, Helmut. Multi-purpose saw blade suspension arrangement for reciprocating saws. 3,878,876, Cl. 145-32.00R.

Abkowitz, Martin A.: *See—*
Williams, David J.; Lardon, Marcel A.; Abkowitz, Martin A.; and Pfister, Gustav, 3,879,201.

Adachi, Kazuma, to Kabushiki Kaisha Daikin Seisakusho. Clutch and brake with resilient operator. 3,878,926, Cl. 192-18.00R.

Adams, Samuel F.; and Guerin, Robert J., to American Paper Tube Company. Doffable bobbin assemblies. 3,878,997, Cl. 242-46.210.

Adams, Thomas H., to du Pont de Nemours, E. I., and Company. Method for the determination of amylase. 3,879,263, Cl. 195-103.500.

Addleston, Phillip Lewis: *See—*
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Adee, Raymond A.; Brooks, Dean P.; and Anderson, John Dale, to Hesston Corporation. Stack forming loader. 3,878,670, Cl. 56-346.000.

Adler, Franklin P., to Pullman Transport Leasing Company. Bottom dumping mating hopper doors sealing arrangement. 3,878,794, Cl. 105-250.000.

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Ah Sam, Lawrence J. Powerhead. 3,878,788, Cl. 102-48.000.

Aichert, Hans. Method and apparatus for melting, purifying and alloying metals. 3,879,022, Cl. 266-34.00V.

Airco, Inc.: *See—*
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Akamatsu, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. DC power control system. 3,879,620, Cl. 307-252.00M.

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Aktiebolaget Karlstads Mekaniska Werkstad: *See—*
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Aktiebolaget Platmanufaktur: *See—*
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Albert Rolland, S.A.: *See—*
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Albright and Wilson Limited: *See—*
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Alcan Research and Development Limited: *See—*
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Alford, Allen John, to Babb Engineering Company. Rotary tool holders. 3,879,046, Cl. 279-48.000.

Allegheny Plastics Inc.: *See—*
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Allen, Gerald F. Physically realizable optimum predictor filter technique for transducers, sensors, and other massive devices, based upon inverse transfers function synthesis. 3,878,724, Cl. 73-362.0AR.

Allen, Joseph C.; and Tate, Jack F., to Texaco Inc. Vertical downward gas-driven miscible blanket flooding oil recovery process. 3,878,892, Cl. 166-267.000.

Allen Organ Company: *See—*
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Allied Chemical Corporation: *See—*
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Allmanna Svenska Elektriska Aktiebolaget: *See—*
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Aluminum Company of America: *See—*
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American Cyanamid Company: *See—*
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Ames, William A.; Ward, James J.; and Carter, Edward H., Jr., to Eastman Kodak Company. Continuous process for polymerizing α,α-disubstituted-β-propiolactones. 3,879,352, Cl. 260-78.30R.

AMF Incorporated: *See—*
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Anderson, John Dale: *See—*
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Anderson, Paul L.; and Brittain, Darryl A., to Sandoz-Wander, Inc. 1-Phenyl-4-hydroxy-1-buten-3-ones and esters thereof. 3,879,449, Cl. 260-488.0CD.

Anderson, Robert E., to Diamond Shamrock Corporation. Removal of SO_2 from flue gas. 3,879,521, Cl. 423-242.000.

Anderson, Robert F.; and Vora, Bipin V., to Universal Oil Products Company. Separate recycle of regenerated acid and of isoparaffin from HF catalyst regeneration zone. 3,879,488, Cl. 260-683.480.

Andersson, Leif; and Lindback, Lars-Erik, to Allmanna Svenska Elektriska Aktiebolaget. Means for measuring the axle load in vehicles. 3,878,908, Cl. 177-136.000.

Ando, Hirokazu: *See—*
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Andreasen, Charles, to General Signal Corporation. Vehicle detection, signaling and communication system. 3,879,004, Cl. 246-62.000.

Andress, Harry J., Jr., to Mobil Oil Corporation. Inhibition of wax crystallization. 3,879,177, Cl. 44-62.000.

Andrews, Bethlehem K.: *See—*
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Anello, Louis Gene; and Sweeney, Richard F., to Allied Chemical Corporation. Tertiary amine sulfamic acid salts of polyfluoroisoalkoxyalkyl carbamates. 3,879,440, Cl. 260-470.000.

Anthony, William H.; and Popplewell, James M., to Saliss Aluminium Ltd. Corrosion resistant aluminum composite. 3,878,871, Cl. 138-140.000.

Apex Molded Products Company: *See—*
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Aquarius, Conrardus Hubertus. Apparatus for moulding lollipops. 3,879,162, Cl. 425-517.000.

Arcan Eastern Limited: *See—*
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Arimura, Katsuo: *See—*
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Ariyan, Zaven S.; Kulka, Marshall; and Harrison, William A., to Uniroyal, Inc.; and Uniroyal, Ltd. 2-Aminothiazoles compositions and methods for using them as psychotherapeutic agents. 3,879,531, Cl. 424-270.000.

Armco Steel Corporation: *See—*
Guzzetta, Franklin H.; and Brown, Roy A., 3,879,277.

Armijo, George W.: *See—*
Lionts, Donald C.; Armijo, George W.; and Mehall, Bernard F., 3,878,913.

Arndt, Frederich: *See—*
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Arneson, Harold N.; and Heitlinger, Louis J., to General Electric Company. Physiological waveform detector. 3,878,833, Cl. 128-2.05A.

Arnold, Charles A., to Varian Associates. Tuned oscillator circuit having a tuned filter output. 3,879,677, Cl. 331-77.000.

Arnold, James: *See—*
Campbell, Donn V.; and Arnold, James, 3,879,735.

Arnold, Robert J.: *See—*
Gattuso, Marion J.; and Arnold, Robert J., 3,879,461.

Arnot, Nathaniel D., Jr. Domestic sewage system. 3,879,290, Cl. 210-110.000.

Arrieta, Daniel Aguilar. Drafting instrument. 3,878,616, Cl. 33-177.000.

Arsem, A. Donald, to RCA Corporation. Range tracking circuit. 3,879,730, Cl. 343-7.300.

Asada, Yasuo, to Hokushin Electric Works, Ltd. Karman vortex shedder. 3,878,716, Cl. 73-194.00B.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Suzuki, Isamu; Ishida, Shinichi; Ohshima, Noboru; Masamoto, Junzo; and Ohtake, Junzo, 3,879,350.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
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Sakazaki, Tadazumi; and Ando, Hirokazu, 3,879,137.
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Ashton, Robert, to Ingersoll-Rand Co. Clearance pocket assembly. 3,878,770, Cl. 92-60.500.

Askwith, Herbert H.; Buckheim, Owen J.; and Henderson, Orville O., to United States of America, Air Force. Encapsulated pellet igniter charge. 3,878,791, Cl. 102-101.000.

Aspinwall, Ronald A.; and Graham, MacKellar K., to Sperry Rand Corporation. Power transmission. 3,879,289, Cl. 210-90.000.

Aszalos, Adorjan; and Vandeputte, John, to E. R. Squibb & Sons, Inc. Complexes of nickel-pimaricin. 3,879,374, Cl. 260-210.0AB.

Asztalos, Stefan, to Linde Aktiengesellschaft. Method and apparatus for the cooling of an object. 3,878,691, Cl. 62-62.000.

Atco Surgical Supply Inc.: *See—*
Connelly, William N., 3,878,568.

Atherton, Richard; Spadaro, Peter R.; and Brummerhop, Frank G., to United States of America, Atomic Energy Commission. Orifice design for the control of coupled region flow. 3,878,870, Cl. 138-42.000.

Atlantic Research Corporation: *See—*
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Atlantic Richfield Company: *See—*
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Atwood, George E.; and Curtis, Charles H., to Duval Corporation. Hydrometallurgical process for the production of copper. 3,879,272, Cl. 204-107.000.

Auric Corporation: *See—*
Bick, Maurice; and Lochet, Jean A., 3,879,269.

Austin Hoy and Company Limited: *See—*
Proctor, Sidney Ernest, 3,878,934.

Austin, Paul Rolland, to University of Delaware, The. Purification of chitin. 3,879,377, Cl. 260-211.00R.

Austin, Sigmund N., to Austinite Corporation. Method and composition for cleaning surfaces. 3,879,216, Cl. 134-4.000.

Austinite Corporation: *See—*
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Axen, Udo F., to Upjohn Company, The. Prostaglandin F_3 analogs. 3,879,437, Cl. 260-468.00D.

Axen, Udo F., to Upjohn Company, The. Prostaglandin F_3 analogs. 3,879,439, Cl. 260-468.00D.

B. F. Goodrich Company, The: *See—*
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Baba, Takashi: *See—*
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Kawashima, Takayoshi; Tange, Akio; Yamamoto, Seiichi; Baba, Takashi; Kondo, Yutaka; Nozaki, Choji; and Sakai, Toshihiko, 3,879,057.

Babb Engineering Company: *See—*
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Backhurst, John Rayner; Goodridge, Francis; Plimley, Raymond Ernest; and Fleischmann, Martin, to National Research Development Corporation. Electrochemical cells comprising fluidized bed electrodes. 3,879,225, Cl. 136-86.00D.

Bader, Joerg; and Vogel, Christian, to Ciba-Geigy Corporation. Control of weeds with 1-phenyl-4-phosphoranylideneamino-5-halo-6(1H)-pyridazones. 3,879,189, Cl. 71-86.000.

Badguerahanian, Leon: *See—*
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Badische Anilin- Soda-Fabrik Aktiengesellschaft: *See—*
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Bailey, Jay R.: *See—*
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Bailey, Paul T.; and Doerr, L. John, III, to Monsanto Company. Mutually exclusive magnetic bubble propagation circuits with discrete elements. 3,879,716, Cl. 340-174.0TF.

Bakassian, Georges, to Rhone-Poulenc S.A. Unsaturated organo-tin mercaptide stabilizers for halo-vinyl polymers. 3,879,344, Cl. 260-45.75S.

Baker, Don R.; and Teach, Eugene G., to Stauffer Chemical Company. Certain methylenedioxyphenyl propynes. 3,879,421, Cl. 260-340.500.

Baker, Jack M.; Dimitroff, Vladimir T.; Mizen, Lawrence R.; and Gray, Russell A., to General Electric Company. Combined steam turbine and gas turbine power plant control system. 3,879,616, Cl. 290-40.000.

Baker, Joseph R., to Diagnostic Instruments, Inc. Ionographic exposure method, apparatus. 3,879,610, Cl. 250-315.000.

Baker, Theodore C.: *See—*
Pfaender, Lawrence V.; Mathias, Richard G.; Baker, Theodore C.; Nolan, James F.; and Bode, Wolfgang W., 3,879,634.

Baldwin, John J.; and Novello, Frederick C. Certain 5-(pyridyl)-3(phenyl)-1,2,4-triazoles. 3,879,404, Cl. 260-294.80F.

Ballinger, Dale O., to Honeywell, Inc. Magnetic field producing apparatus. 3,879,754, Cl. 360-56.000.

Banholzer, Rolf: *See—*
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Barber-Greene Company: *See—*
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Barber, Harry A.: *See—*
Smith, Donald W.; Beaty, Ronald W.; and Barber, Harry A., 3,879,149.

Barkey, Kenneth T.; and May, Douglas C., to Eastman Kodak Company. Dyeing polyesters. 3,879,341, Cl. 260-40.00P.

Barkhoudarian, Sarkis; Johnson, Charles Bruce; and Goetz, George G., to Bendix Corporation, The. Device for converting an acoustic pattern into a visual image. 3,879,700, Cl. 340-5.0MP.

Barneck, Charles A., to United States of America, Army. Differential amplifier sliding reference. 3,879,662, Cl. 324-98.000.

Barnett, Robert O. Method and apparatus for applying and removing a soft contact lens. 3,879,076, Cl. 294-1.0CA.

Barnum, Phillip R. Musical teaching and tuning apparatus. 3,878,754, Cl. 84-454.000.

Barr and Stroud Limited: *See—*
Bell, Martin; and McPherson, Glenn, 3,878,690.

Barry Wright Corporation: *See—*
Proulx, Romeo T., 3,878,630.

Bartlett, Richard F.; and Case, Laura K., to Itek Corporation. Electrophotographic copying process. 3,879,197, Cl. 96-1.400.

Barton, James C.; Christensen, Jon C.; Mueller, James P.; and Sprinkle, Larry W., to Caterpillar Tractor Company. Vehicle seat. 3,879,007, Cl. 248-400.000.

Barton, Paul, to International Standard Electric Corporation. Doppler radio navigation beacon antenna with wide and unequal element spacing. 3,879,734, Cl. 343-106.00D.

BASF Aktiengesellschaft: *See—*
Nohe, Heinz; Wenisch, Franz; and Suter, Hubert, 3,879,271.

Basf Farben & Fasern Aktiengesellschaft: *See—*
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Basf Wyandotte Corporation: *See—*
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Basile, Anthony G. Adjustable ladder. 3,878,918, Cl. 182-202.000.

Bates, Keith: *See—*
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Batora, Gunter: *See—*
Nashan, Gerd; Volmari, Josef; Peter, Helmut; and Batora, Gunter, 3,879,267.

Batzer, Hans; Habermeier, Juergen; and Porret, Daniel, to Ciba-Geigy AG. Epoxidized diketal or diacetal from Δ^3-cyclohexene-1,1-dimethanol and 1,4-cyclohexanedione or terephthalaldehyde. 3,879,422, Cl. 260-340.700.

Baucke, Friedrich Gustav Karl, to Jenaer Glaswerk, Schott & Gen. Electrode with exchangeable membrane. 3,879,279, Cl. 204-195.00M.

Bauer, Kunibert; and Guttinger, Manfred, to Sandco Limited. Conveyor system and control. 3,878,933, Cl. 198-38.000.

Bauer, Rudolf: *See—*
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Baum, Robert E., to Sencore, Inc. TV test pattern and method of testing. 3,879,749, Cl. 358-10.000.

Bausch & Lomb Incorporated: *See—*
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Baxter Laboratories, Inc.: *See—*
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Bayer Aktiengesellschaft: *See—*
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Frommer, Werner; Puls, Walter; and Schmidt, Delf, 3,879,546.
Kabbe, Hans-Joachim; Horstmann, Harald; Plumpe, Hans; Puls, Walter; and Petersen, Siegfried, 3,879,541.
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Serini, Volker; Schnell, Hermann; and Vernaleken, Hugo, 3,879,348.
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Wingler, Frank; Muller, Richard; Wassmuth, Gerd; Erdmenger, Rudolf; and Ullrich, Martin, 3,879,357.

Bayern-Chemie Gesellschaft fur Flugchemische Antriebe mit beschrankter Haftung: *See—*
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Bayly, William I., to American Gas Furnace Company. Volumetric feeder for rotary furnaces. 3,878,947, Cl. 214-18.00K.

Beal, Robert G. Multiple cam mechanism for internal combustion engines. 3,878,822, Cl. 123-90.160.

Beale, Julian Robert Anthony: *See—*
Scott, Julian Portway; and Beale, Julian Robert Anthony, 3,879,613.

Bean, Kenneth E., to Texas Instruments Incorporated. Light projection coupling of semiconductor type devices through the use of thermally grown or deposited SiO_2 films. 3,879,606, Cl. 250-227.000.

Beaty, Ronald W.: *See—*
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Bechara, Ibrahim S.; and Holland, Dewey G. Amino orthoesters. 3,879,465, Cl. 260-584.00C.

Bechtol, Charles O., to Richards Manufacturing Company. Patello-femoral prosthesis. 3,878,566, Cl. 3-1.910.

Beck, Carle P., to Beck, Marian M., a part interest. Heating apparatus for well pitts and the like. 3,879,600, Cl. 219-342.000.

Beck, Marian M.: *See—*
Beck, Carle P., 3,879,600.

Becton, Dickinson and Company: *See—*
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Beduhn, Dantel E.; and Morrow, James G., Sr. Crane support structure. 3,878,944, Cl. 212-145.000.

Beer, Bernard; Clody, Donald E.; Horovitz, Zola P.; and Vogel, John R., to E. R. Squibb & Sons, Inc. Anti-anxiety combination and method of use. 3,879,512, Cl. 424-253.000.

Bell, Martin; and McPherson, Glenn, to Barr and Stroud Limited. Liquid transfer system. 3,878,690, Cl. 62-55.000.

Bell, Raymond W. H.: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
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Bendix Corporation, The: *See—*
Barkhoudarian, Sarkis; Johnson, Charles Bruce; and Goetz, George G., 3,879,700.

Benjamin, Milton L.; Walker, David D.; and Crawford, Arthur R., to Erickson Tool Company. Indexing chuck with position sensor. 3,879,045, Cl. 279-5.000.

Benjamin, Ranana. Blank and method using indicia for directing the manner and sequence of folding. 3,878,638, Cl. 46-1.00L.

Bennes Marrel: *See—*
Corompt, Antoine, 3,878,948.

Benson, Martin James. Harpsichord jacks. 3,878,753, Cl. 84-258.000.

Bentz, Francis: *See—*
Velker, Eugen; Bentz, Francis; and Reiff, Helmut, 3,879,450.

Berenson, Herman, to American Cyanamid Company. 3,5-bis(4-pyridylmethyl)-2H-1,3,5-tetrahydrothiodiazine-2-thione used as a fungicide. 3,879,550, Cl. 424-246.000.

Berets, Donald Joseph, to American Cyanamid Company. Electrochromic devices. 3,879,108, Cl. 350-160.00R.

Berger, Frank M.: *See—*
Reisner, David B.; Ludwig, Bernard J.; Fukui, George M.; and Berger, Frank M., 3,879,544.

Berggren, Rolf Uno; and Blom, Erik Gustav Birger, to Sven Goran Pettersson. Transparency slide unit as well as method and apparatus for producing the same. 3,878,632, Cl. 40-152.000.

Beriger, Ernst; and Drabek, Jozef, to Ciba-Geigy Corporation. 0-1-Phenyl-2 halovinyl-dithio phosphates. 3,879,499, Cl. 260-957.000.

Berndt, Hans-Detlef; Steinbeck, Hermann; and Wiechert, Rudolf, to Schering Aktiengesellschaft. 2-Halogen-18-methyl-1-androstene. 3,879,383, Cl. 260-239.550.

Berriman, Lester P., to Dresser Industries, Inc. Filtering apparatus and method. 3,879,286, Cl. 210-23.000.

Berry, Gordon C.; and Keithley, Harry E., to Gulf & Western Manufacturing Company (Hastings). Knockout arrangement for presses. 3,878,706, Cl. 72-345.000.

Bersin, Richard L.; and Singleton, Michael J., to International Plasma Corporation. Plasma etching device and process. 3,879,597, Cl. 219-121.00P.

Bertorelli, Orlando L.; Mays, Robert K.; Williams, Lloyd E.; and Zimmerman, Howard F., Jr., to J. M. Huber Corporation. Alkali metal polysilicates and their production. 3,879,527, Cl. 423-332.000.

Best, John S., to Dow Chemical Company, The. Method for suppressing the formation of ice in natural or man-made bodies of water. 3,878,887, Cl. 165-30.000.

Bestenreiner, Friedrich: *See—*
Wick, Richard; Bestenreiner, Friedrich; and Giglberger, Dieter, 3,879,122.

Betrix, Claude. Axial guiding apparatus. 3,879,093, Cl. 308-6.00C.

Bettin, Hubertus; and Folta, Alfred, to Olympia Werke AG. Transmission of signals between a data processing system and input and output units. 3,879,713, Cl. 340-172.500.

Betz Laboratories, Inc.: *See—*
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,879,513.
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Bicher, Haim I., to Mediscience Technology Corporation. Catheter system for blood gas monitoring. 3,878,830, Cl. 128-2.00E.

Bick, Maurice; and Lochet, Jean A., to Auric Corporation. Methods for high current density gold electroplating. 3,879,269, Cl. 204-46.00G.

Bielenberg, Max J.: *See—*
Quinn, Lawrence R.; and Bielenberg, Max J., 3,878,950.

Bierman, Clarence R.; and Welks, John D., to M & T Chemicals Inc. Metal-polymer composites and methods for their preparation. 3,879,238, Cl. 156-3.000.

Bifora-Uhren J. Bidlingmaier GmbH: *See—*
Meitinger, Heinz, 3,878,673.

Billings, William W., to Westinghouse Electric Corporation. AC solid state power controller with minimized internal power supply requirements. 3,879,652, Cl. 323-22.0SC.

Bilow, Norman; and Landis, Abraham L., to Hughes Aircraft Company. Homopolymerization of acetylene substituted polyimide polymers. 3,879,349, Cl. 260-47.0UA.

Binder, Hans; and Luthe, Helmut, to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH. Motor vehicle test apparatus having facilities for simultaneously testing the driving capability of a vehicle operator. 3,879,705, Cl. 340-53.000.

Bino, Charles F.: *See—*
Huber, Kenneth C.; Bino, Charles F.; and Connelly, Roland Lee, 3,879,134.

Birtwell, William C.: *See—*
Norton, Robert L.; and Birtwell, William C., 3,878,839.

Bivins, Oliver W.: *See—*
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Bjorklund, Carolyn, to Measurex Corporation. Method of measuring the amount of substance associated with a base material. 3,879,607, Cl. 250-252.000.

Black & Decker Manufacturing Company, The: *See—*
Ehrlich, Stephen Jeffrey, 3,879,573.

Blackwell, Jennings P., to Phillips Petroleum Company. Arylene sulfide polymer cured with the aid of certain compounds. 3,879,355, Cl. 260-79.000.

Blais, Aime. Traction aid for vehicles. 3,878,988, Cl. 238-14.000.

Blalock, Theron V.; and Borkowski, Casimer J., to United States of America, Atomic Energy Commission. Thermal noise power thermometry. 3,878,723, Cl. 73-359.000.

Blanton, James R., to Otis Engineering Corporation. Pneumatic valve position indicator. 3,878,862, Cl. 137-553.000.

Blodee, Leif, to E. H. Sheldon and Company. Cabinet systems with tension rods as frame members. 3,879,096, Cl. 312-265.000.

Blom, Erik Gustav Birger: *See*—
Berggren, Rolf Uno; and Blom, Erik Gustav Birger, 3,878,632.

Blondel, Jean-Claude Rene Georges; Fouche, Jean Clement Louis; and Gueremy, Claude Georges Alexandre, to Rhone-Poulenc S.A. Phenthiazine derivatives in pharmaceutical compositions. 3,879,551, Cl. 424-247.000.

Blood, Alden E.; and Hagemeyer, Hugh J., Jr., to Eastman Kodak Company. Preparation of unsaturated organic compounds by oxidative dehydrogenation. 3,879,446, Cl. 260-486.00D.

Boaron, Massimo, to Fiat Societa per Azioni. Software accessible sentinel memory and comparator for continuously monitoring the contents of the instruction register of the central memory unit in a digital data processing system. 3,879,711, Cl. 340-172.500.

Bobeck, Andrew Henry; Fischer, Robert Frederick; Geusic, Joseph Edward; and Nelson, Terence John, to Bell Telephone Laboratories, Incorporated. Single wall domain memory arrangement. 3,879,585, Cl. 179-90.0BB.

Bode, Wolfgang W.: *See*—
Pfaender, Lawrence V.; Mathias, Richard G.; Baker, Theodore C.; Nolan, James F.; and Bode, Wolfgang W., 3,879,634.

Bodelind, Bo Torsten Krister: *See*—
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Boehner, Beat: *See*—
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Boehringer Ingelheim G.m.b.H.: *See*—
Walther, Gerhard; Bauer, Rudolf; Hubner, Hans Hugo; and Banholzer, Rolf, 3,879,556.

Boesten, Wilhelmus H. J., to Stamicarbon, B.V. Preparation of aspartyl dipeptide-alkylesters using aqueous solvent. 3,879,372, Cl. 260-112.500.

Boiko, Georgy Alexandrovich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Boiko, Georgy Alexandrovich; Egorov, Sergei Petrovich; Kumysh, Ilya Iosifovich; and Popov, Lev Vasilievich, 3,878,882.

Boisse, Pierre Paul; Bombardier, Jacques; and Leclerc, Rejean, to Bombardier Limited. Snowmobile trail groomer. 3,878,900, Cl. 172-145.000.

Bolger, Laurence L. Suspension clip. 3,878,590, Cl. 24-261.00C.

Bombardier, Jacques: *See*—
Boisse, Pierre Paul; Bombardier, Jacques; and Leclerc, Rejean, 3,878,900.

Bombardier Limited: *See*—
Boisse, Pierre Paul; Bombardier, Jacques; and Leclerc, Rejean, 3,878,900.

Bonazoli, Robert P.; and Janvier, Charles R., to GTE Sylvania Incorporated. Tilt sensor. 3,879,703, Cl. 340-25.000.

Bonnafe, Marcel: *See*—
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Bonner, Eugene Frederick, to Union Carbide Corporation. Polylactam powders by anionic polymerization. 3,879,354, Cl. 260-78.00L.

Bontinick, Walter, to UCB, S.A. Heat-sealable film capable of forming peelable seals. 3,879,492, Cl. 260-857.00D.

Borg-Warner Corporation: *See*—
Schurger, Joseph A., 3,878,864.

Borkowski, Casimer J.: *See*—
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Boroschewski, Gerhard; Arndt, Frederich; and Rusch, Reinhard, to Schering AG. (N,-dimethyl-N-[3-methylmetalolycarbamyloxy)-phenyl]-urea. 3,879,441, Cl. 260-471.00C.

Bosma, Robert W., to Norton Company. Discard mount for disc type grinding wheel. 3,879,178, Cl. 51-168.000.

Bosselaers, Robert Jan, to RCA Corporation. Sawtooth waveform generator. 3,879,683, Cl. 331-111.000.

Bottari, Francesco; Saettone, Marco Fabrizio; Serafini, Maria Francesca; and Tellini, Natale, to Messrs. Laboratorio Guidotti & C. S.p.A. 4-Aryl-4-oxazolin-2-ones exhibiting myotonic and myorelaxing activity. 3,879,410, Cl. 260-307.00C.

Boudewyn, Adrian T., to Levine, Jerry A., a part interest. Anchoring device for hospital bed. 3,878,573, Cl. 5-328.000.

Boutillier, Pierre Emile; and Chaudot, Lucien, to Societe Anonyme: Produits Chimiques Ugine Kuhlmann. Extrusion of foamable plastic materials. 3,879,505, Cl. 264-48.000.

Bowman, Ronald R., to Motorola, Inc. Etchant for gold. 3,879,303, Cl. 252-79.100.

Boyers, David G.: *See*—
Tickner, E. Glenn; and Boyers, David G., 3,878,832.

Boyle, Frank A., to General Dynamics Corporation. Hole locator for automatic riveting machines. 3,878,595, Cl. 29-200.00P.

BP Chemical International Limited: *See*—
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Gammon, Geoffrey James; and Addleston, Phillip Lewis, 3,879,363.
Gasson, Edward James; Korsnar, Thomas Charles; and Marrian, Stanley Frederic, 3,879,435.

Brady, Donnie G.: *See*—
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Braginetz, Paul A., to Philip Morris Incorporated. Handle construction. 3,878,605, Cl. 30-85.000.

Braid, Milton, to Mobil Oil Corporation. Organic compositions containing synergistic antioxidant mixtures. 3,879,307, Cl. 252-51.50R.

Brand, Gunter: *See*—
Broche, Werner; Ignatius, Albert; Brand, Gunter; Stirzel, Adolf; and Storch, Wilhelm, 3,879,105.

Brant, Daniel C.: *See*—
Kibler, Robert L.; and Brant, Daniel C., 3,878,921.

Brastow, Carl H., to International Shoe Machine Corporation. Coating machine. 3,878,814, Cl. 118-203.000.

Breuner, Gerald L. Attachment for rotor hub and pairs of blades. 3,879,153, Cl. 416-141.000.

Bridwell, John W.; and Hodge, Norman J., to Caterpillar Tractor Company. Parking brake control system. 3,879,091, Cl. 303-71.000.

Brikenshtein, Khaim-Mordkhe Aronovich: *See*—
Belov, Gennady Petrovich; Dzhabiev, Taimuraz Savelievich; Dyachkovsky, Fridrikh Stepanovich; Smirnov, Vyacheslav Ivanovich; Karpova, Nelli Dzhavkharovna; Brikenshtein, Khaim-Mordkhe Aronovich; Gerasina, Matrena Petrovna; Kuzmin, Vladimir Evgenievich; Matkovsky, Petr Evgenievich; Russiyan, Ljudmila Nikolaevna; Pomogailo, Anatoly Dmitrievich; and Chirkov, Nikolai Mikhailovich, deceased, 3,879,485.

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Broche, Werner; Ignatius, Albert; Brand, Gunter; Stirzel, Adolf; and Storch, Wilhelm, to Jenoptik Jena G.m.b.H. Telescope with an image reversing system. 3,879,105, Cl. 350-51.000.

Brooke, Alan H., to Rockwell International Corporation. Actuator for a transmission modulator valve. 3,878,738, Cl. 74-854.000.

Brooks, Dean P.: *See*—
Adee, Raymond A.; Brooks, Dean P.; and Anderson, John Dale, 3,878,670.

Brouard Madariaga, Valentin. Round bar straightener-polisher machine. 3,878,702, Cl. 72-100.000.

Brown, George E., Jr., to Conen Corporation. Method for making diglycolic acid, dipropionic acid and the salts thereof. 3,879,452, Cl. 260-531.00R.

Brown, Howard R.; and Rizza, Michael C. Window construction. 3,878,644, Cl. 49-67.000.

Brown, Joseph L.; and Terry, Don L., to Kentucky Fried Chicken Corporation. Pumping supply system for delivering at ambient temperature highly viscous material. 3,879,150, Cl. 415-72.000.

Brown, Roy A.: *See*—
Guzzetta, Franklin H.; and Brown, Roy A., 3,879,277.

Brugger, Wilhelm: *See*—
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Atherton, Richard; Spadaro, Peter R.; and Brummerhop, Frank G., 3,878,870.

Bruneau, Andre. Drawing board fitment. 3,878,614, Cl. 33-76.00R.

Bruneau, Paul; and Nufer, Gaston. Vertical blinds. 3,878,877, Cl. 160-168.000.

Bryzinsky, Frank M.: *See*—
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Buchel, Karl-Heinz: *See*—
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Buchholz, Richard Frank; and Reintjes, Marten, to International Telephone and Telegraph Corporation. Plicatamides. 3,879,432, Cl. 260-398.500.

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Askwith, Herbert H.; Buckheim, Owen J.; and Henderson, Orville O., 3,878,791.

Buckley, Norman Ian; and Mansfield, Brian Michael, to Shorrock Developments Limited. Flat beam intruder detection device. 3,879,719, Cl. 340-258.00B.

Buhrer, Erwin; and Keller, Franz, to said Buhrer, by said Keller. Molding machine with a sand scraper. 3,879,156, Cl. 425-218.000.

Buhrer, Erwin: *See*—
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Buisson, Michel A., to Naphtachemil. Process for preparing phosphorus-containing polyols. 3,879,501, Cl. 260-984.000.

Bunn, Dorrance P., Jr.: *See*—
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Burgers, August, to Europatent S.A. Door panel structure. 3,878,647, Cl. 49-382.000.

Burke, Joseph Stephen: *See—*
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Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Preparation of latex from aqueous emulsion of solvent/polymer solution. 3,879,326, Cl. 260-29.60R.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Formation of a latex from an organic solvent dispersion of a water insoluble polymer. 3,879,327, Cl. 260-29.6XA.

Burkhardt, Gottfried; Metschnabl, Andreas; and Greppmaier, Paul, to DIEHL datensysteme GmbH. Roller printer. 3,878,781, Cl. 101-228.000.

Burlington Industries, Inc.: *See—*
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Burns, Richard H., to Bausch & Lomb Incorporated. Fluid network for and method of controlling zero-flow through a measuring cell. 3,878,727, Cl. 73-422.0TC.

Burroughs Corporation: *See—*
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Butler, Douglas S., to USM Corporation. Method for installing a window in a vehicle body. 3,879,241, Cl. 156-108.000.

Butler, James M.; and Simmons, Gerald P. Vehicle suspension system. 3,879,052, Cl. 280-104.50R.

Byrd, Curtis W. Utility meter pedestal-foundation mounting. 3,879,641, Cl. 317-104.000.

C. Evans & Sons Limited: *See—*
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Cadle, Richard Whittington: *See—*
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Cairns, Hugh; and Minshull, Robert, to Fisons Limited. Ditetrazolylbenzodipyrans. 3,879,411, Cl. 260-308.00D.

Cairns, James W., to Garlock Inc. Low friction bearing material and method. 3,879,301, Cl. 252-12.000.

Cambridge Scientific Instruments Limited: *See—*
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Campana, Paolo: *See—*
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Campbell, Donn V.; and Arnold, James, to United States of America, Army. Broadband antenna systems with isolated independent radiators. 3,879,735, Cl. 343-792.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
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Canale, Raymond P.: *See—*
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Carborundum Company, The: *See—*
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Carl, Joseph W.; and Swartwood, Richard V., to United States of America, Air Force. Special purpose hybrid computer to implement kronecker-matrix transformations. 3,879,605, Cl. 235-156.000.

Carlisle, Richard S., to American Can Company. Flexible container with arcuate self-sealable spout. 3,878,977, Cl. 222-491.000.

Carlow, Earl Fred; and Nash, Harold Garth, to Motorola, Inc. Digital frequency-shift keying receiver. 3,879,665, Cl. 325-320.000.

Carlson, David Emil, to RCA Corporation. Corona discharge method of depleting mobile ions from a glass region. 3,879,183, Cl. 65-30.000.

Carlson, Raymond H., to Textron Inc. Bi-lobular self-thread forming fastener. 3,878,759, Cl. 85-46.000.

Carmeli, Werter, to International Business Machines Corporation. Burless blanking machine and process. 3,878,746, Cl. 83-126.000.

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Carmien, Joseph Allen; and Yuhos, John R., to Nupla Corporation. End plug for fiberglass tool handles. 3,879,145, Cl. 403-268.000.

Carpenter, Roland Paul; Main, George; and Sutton, Anthony Hubert, to Lever Brothers Company. Fish product prepared by decolorizing fish with alkaline hydroperoxide and then deodorizing by isopropanol extraction. 3,879,370, Cl. 260-112.00R.

Carr, John B.; and Hass, Duane K., to Shell Oil Company. Endoparasitic nematode control by isoxazoles. 3,879,533, Cl. 424-272.000.

Carr, John B.: *See—*
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Cavaliere, Joseph Richard; and Scarpero, William John, Jr., to International Business Machines Corporation. Sense amplifier. 3,879,621, Cl. 307 279.000.

Cavanna, Anthony John; and Colombo, Edward Armando, to Mobil Oil Corporation. Method of producing a foam-form flat film or sheet having a more balanced machine and traverse direction strength. 3,879,507, Cl. 264-51.000.

CBF Systems, Inc.: *See—*
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Celio, Hermes George. Lifting apparatus. 3,879,077, Cl. 294-67.00R.

Cellu Products Company: *See—*
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Centro-Metalcut AB: *See—*
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Cernosek, Louis C. Method of constructing a remotely located drilling structure. 3,878,662, Cl. 52-745.000.

Chaban, Richard J., to McBain Instruments, Inc. Microstereoscope. 3,879,107, Cl. 350-138.000.

Chabot, Ferdinand E. Circuit breaker terminal connector, and heat dissipator assembly. 3,879,100, Cl. 339-112.00R.

Chalfont, Geoffrey Reginald; Crump, Ronald Alfred; and Thukral, Prem Sagar, to BP Chemical International Limited. Polymerisation process. 3,879,362, Cl. 260-88.20R.

Chandler, Ollie W.; and Egly, Richard S., to Commercial Solvents Corporation. Non-caking composition of 2-nitro-2-methyl-1-propanol. 3,879,478, Cl. 260-632.500.

Chandon Handelsgesellschaft: *See—*
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Chapin, Ned. Pressure recordation. 3,878,712, Cl. 73-146.000.

Chaplin, Merle P. Mechanical elimination of aquatic growths. 3,878,669, Cl. 56-9.000.

Chartier, Guy Norman. Auto body treatment implement. 3,878,709, Cl. 72-457.000.

Chatillon Societa' Anonima Italiana per ler Fibre tessili Artificiali S.p.A.: *See—*
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Cherrington, Martin Dee. Apparatus and process for drilling underground arcuate paths. 3,878,903, Cl. 175-45.000.

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Chiang, Mutong T.: *See—*
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Chicago Bridge & Iron Company: *See—*
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Chicago Metal Mfg. Co.: *See—*
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Chinnock, Charles R.; and Kaminski, James B., to National Steel Corporation. Method and apparatus for handling dust separated from gases. 3,879,179, Cl. 55-1.000.

Chippewa Paper Products Company: *See—*
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Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos. Phenyl derivatives. 3,879,429, Cl. 260-348.00R.

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Christe, Karl O., to Rockwell International Corporation. High energy oxidizers and method of synthesizing same. 3,879,526, Cl. 423-277.000.

Christensen, Jon C.: *See—*
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Christensen, Svend: *See—*
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Chuang, Vincent T.: *See—*
Omietanski, George M.; and Chuang, Vincent T., 3,879,433.

Chvala, William J., to Coca-Cola Company, The. Mobile display cart. 3,879,053, Cl. 280-111.000.

Ciba-Geigy AG: *See—*
Batzer, Hans; Habermeier, Juergen; and Porret, Daniel, 3,879,422.
Schellenbaum, Max; Duennenberger, Max; and Casagrande, Fulvio, 3,879,477.
Zondler, Helmut; and Pfleiderer, Wolfgang, 3,879,399.

Ciba-Geigy Corporation: *See—*
Bader, Joerg; and Vogel, Christian, 3,879,189.
Beriger, Ernst; and Drabek, Jozef, 3,879,499.
Dawes, Dag; and Boehner, Beat, 3,879,412.
Friedrich, Hans-Helmut; Linhart, Helmut; and Wirth, Hermann Otto, 3,879,346.
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Clampco, Incorporated: *See—*
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Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Krehbiel, Delmar D.; and Kennedy, Carl D., to Continental Oil Company. Process for recovering hydrocarbons using overbased linear alkylate sulfonates as waterflood additives. 3,878,894, Cl. 166-270.000.

Clark, James P.; Demars, Jimmy A.; and Wilson, Gerald G., to General Mills Chemicals, Inc. Purification of sterols by distillation. 3,879,431, Cl. 260-397.250.

Clarke, Anthony J.: *See—*
Fishbein, John; Bell, Raymond W. H.; and Clarke, Anthony J., 3,879,316.

Clary, John G., to Addmaster Corporation. Squeeze printer with zero elimination. 3,878,777, Cl. 101-93.280.

Clary, John G., to Addmaster Corporation. Squeeze printer. 3,878,779, Cl. 101-99.000.

CLC Corporation: *See—*
Lionts, Donald C.; Armijo, George W.; and Mehall, Bernard F., 3,878,913.

Clecon, Incorporated: *See—*
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Clody, Donald E.: *See—*
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Coate Burial Vault, Inc.: *See—*
Yost, Kenneth J., 3,879,285.

Coca-Cola Company, The: *See—*
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Cocozzella, Antonio. Method of making a frozen pizza shell and pizza. 3,879,564, Cl. 426-283.000.

Coffelt, Delphos R. Imprinting machine and method of operation. 3,878,782, Cl. 101-235.000.

Coffey, Chase C., to Firm of Dock & Dock, The, a part interest. One-piece snap-together toggle head. 3,878,755, Cl. 85-3.00R.

Cohen, Marvin P.: *See—*
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., 3,879,427.

Cole, David R., to Allis-Chalmers Corporation. Center break disconnect switch. 3,879,588, Cl. 200-48.0CB.

Cole, Edward N.; and Canale, Raymond P., to General Motors Corporation. Rotary combustion engine gas seal arrangement. 3,878,820, Cl. 123-8.450.

Colgate-Palmolive Company: *See—*
Renold, Adolph, 3,879,300.

Colin, Marcel Victor Auguste, to Societe d'Equipements, Manutentions et Transports (S.E.M.A.T.). Device for loading materials into a container. 3,878,949, Cl. 214-83.300.

Collier, James R.; and Smith, Randel R., to Singer Company, The. Fine gauge tufting machines. 3,878,800, Cl. 112-79.00R.

Collins, John D., to Raytheon Company. Signal processor and subassemblies therefor. 3,879,661, Cl. 324-77.00B.

Colombo, Edward Armando: *See—*
Cavanna, Anthony John; and Colombo, Edward Armando, 3,879,507.

Colpitts, David A.: *See—*
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Colt Industries Operating Corporation: *See—*
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Colvin, Donald C., to United Aircraft Corporation. Auxiliary turbine/-compressor system for turbine engine. 3,878,677, Cl. 60-39.140.

Combustion Engineering, Inc.: *See—*
Foster, Robert Gilmer; and Cyboron, Richard David, 3,879,612.

Comerford, John; and Lauritsen, Richard L., to Controls Company of America. Switch having pivoted u-shaped resilient conductive blade. 3,879,592, Cl. 200-153.00G.

Commercial Solvents Corporation: *See—*
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Wehrmeister, Herbert L., 3,879,524.

Commissariat a l'Energie Atomique: *See—*
Deronzier, Jean Claude; Foulletier, Louis; Huyghe, Jean; and Niezborala, Jean Marc, 3,878,885.

Commonwealth Scientific and Industrial Research Organization: *See—*
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Compagnie Electro-Mecanique: *See—*
Mathieu, Ernst, 3,879,133.

Compagnie General d'Electricite: *See—*
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Compagnie Generale de Radiologie: *See—*
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Compagnie Internationale pour l'Informatique: *See—*
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Comptoir Lyonnais de Verrerie: *See—*
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Connelly, Roland Lee: *See—*
Huber, Kenneth C.; Bino, Charles F.; and Connelly, Roland Lee, 3,879,134.

Connelly, William N., to Atco Surgical Supply Inc. Reversible pad, removable cover and breast form combination. 3,878,568, Cl. 3-36.000.

Conner, William R., Jr., to Stahl-Urban Company. Loader-unloader for automatic sewing apparatus. 3,878,801, Cl. 112-121.290.

Conrad, Gerald L. Vehicle mounted safety warning device and bracket therefor. 3,878,810, Cl. 116-28.00R.

Continental Oil Company: *See—*
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Cooke, Richard, to Lawrence Peska Associates, Inc. Simulated baseball game. 3,879,037, Cl. 273-89.000.

Copeland, Claude T., to Dow Chemical Company, The. Method for forming a consolidated gravel pack in a well borehole. 3,878,893, Cl. 166-276.000.

Corompt, Antoine, to Bennes Marrel. Self-contained device for handling containers on a lorry. 3,878,948, Cl. 214-77.00R.

Corrugated Packing and Sheet Metal Company Limited, The: *See—*
Tozer, Michael John Caswell, 3,879,043.

Coscina, William Alfred. Low profile dental impression tray and set of such trays. 3,878,610, Cl. 32-17.000.

Coster Tecnologie Speciali S.p.A.: *See—*
Giuffredi, Giancarlo, 3,878,976.

Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, to Rhone-Poulenc S.A. 2-Pyridazinylisoindolin-1-one derivatives. 3,879,390, Cl. 260-250.00A.

Coulter Information Systems, Inc.: *See—*
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Courbat, Pierre: *See—*
Valenza, Andre; Horvath, Erno; Courbat, Pierre; and Albert, Alban, 3,879,469.

Cousino, Bernard A.; and Morgan, David W., to Cousino Corporation. Solenoid drive mechanism actuator with attached magnet. 3,879,694, Cl. 335-229.000.

Cousino Corporation: *See—*
Cousino, Bernard A.; and Morgan, David W., 3,879,694.

Couten, Jean, to Chandon Handelsgesellschaft. Bottle packing installation. 3,878,665, Cl. 53-143.000.

Coutin, Pierre F.: *See—*
Guimier, Jacques A.; and Coutin, Pierre F., 3,879,642.

Covarrubias, George S.: *See—*
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Coville, William W.: *See—*
Orlens, Alfreds; and Coville, William W., 3,878,929.

Cox, James Patrick; and Cox, Jeanne Marie, to Martin, Robertson & Bain Ltd. Process for preparing a quick-cooking rice. 3,879,566, Cl. 426-309.000.

Cox, Jeanne Marie: *See—*
Cox, James Patrick; and Cox, Jeanne Marie, 3,879,566.

CPC International Inc.: *See—*
Milkovich, Ralph; Chiang, Mutong T.; and Schulz, Gerald O., 3,879,494.
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Crabbe, Pierre; and Fried, John H., to Syntex (U.S.A.), Inc. 4,5,13-Prostatrienoic acid derivatives. 3,879,438, Cl. 260-468.00D.

Craft, Michael E., to Motorola, Inc. Isolated contact. 3,878,601, Cl. 29-578.000.
Crandell, Delmar W. Tie-rod end tool. 3,878,739, Cl. 81-119.000.
Crane, Walton B. Plastic reinforced produce container. 3,878,980, Cl. 229-34.00R.
Crase, Gary Monroe: *See—*
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Crawford, Arthur R.: *See—*
Benjamin, Milton L.; Walker, David D.; and Crawford, Arthur R., 3,879,045.
Crawford, James E., to Owens-Illinois, Inc. Linear copolymers having pendant peroxycarbonate ester functionality, their synthesis and use. 3,879,353, Cl. 260-77.50R.
Cressman, Paul J.; Limburg, William W.; and Pilato, Louis A., to Xerox Corporation. Polymerization. 3,879,275, Cl. 204-165.000.
Cristiani, Athos, to AMF Incorporated. Device for forming reserves of a tape. 3,878,979, Cl. 226-11.000.
Crites, Nelson Allen, to Abbott Laboratories. Reversible, disposable clinical thermometer. 3,878,722, Cl. 73-356.000.
Crocker, Samuel Lincoln, to Stanley Works, The. Drive linkage for swinging doors. 3,878,646, Cl. 49-326.000.
Croix, Louise S., to Airco, Inc. Inhalant analgesic and anesthetic composition. 3,879,474, Cl. 260-614.00F.
Crompton & Knowles Corporation: *See—*
Rust, Edgar C., Jr., 3,879,256.
Cruden, John L. Piped opening for use in a garment and apparatus for forming same. 3,879,029, Cl. 270-61.00R.
Crump, Ronald Alfred: *See—*
Chalfont, Geoffrey Reginald; Crump, Ronald Alfred; and Thukral, Prem Sagar, 3,879,362.
Crute, Billy G., to Stant Manufacturing Company, Inc. Pressure-vacuum relief vehicle radiator cap with free-turning shell. 3,878,965, Cl. 220-295.000.
Curry, John Joseph; and Lange, Carl William, to Illinois Tool Works Inc. Child resistant closures. 3,878,961, Cl. 215-219.000.
Curtis, Charles H.: *See—*
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Curtiss-Wright Corporation: *See—*
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Cuthbert, John David; Fehrs, Delmer Lee; and Munro, David Farnham, to Bell Telephone Laboratories, Incorporated. Photomask inspection by real time diffraction pattern analysis. 3,879,131, Cl. 356-106.00R.
Cutler-Hammer, Inc.: *See—*
Oakland, Frederic; Kunath, Elmer M.; and Rauenbuehler, John A., 3,879,695.
CWW Research and Development Company: *See—*
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Cybersol Inc.: *See—*
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Cyrway, Edward N., Jr.: *See—*
Kreider, Benjamin A.; Metalsky, William J.; and Cyrway, Edward N., Jr., 3,879,165.
Daehlin, O. Theodore; Standke, William W.; and Walters, Wayne L., to Honeywell, Inc. High speed light beam modulator. 3,879,687, Cl. 332-7.510.
Dahl, Erik Qvale, to Elkem-Spigerverket A/S. Method of producing burned crystalline carbonate minerals. 3,879,514, Cl. 264-63.000.
Dahl, Rulon R.; and Garrett, Garnett O'Brien, to Developmental Design, Inc. Disposable toothbrush assembly. 3,879,139, Cl. 401-135.000.
Daicel Ltd.: *See—*
Furukawa, Shogi; Sonoyama, Yuzo; and Ohi, Akira, 3,879,345.
Daido Steel Sheet Manufacturing Corporation: *See—*
Watanabe, Takashi; and Tarumi, Eiichi, 3,879,231.
Daimler-Benz Aktiengesellschaft: *See—*
Gulich, Hans-Adolf; and Schildhorn, Bernd, 3,878,914.
Dall'Argine & Ghiretti s.n.c., Stradella De Collecchio: *See—*
Dall'Argine, Gianfranco; and Ghiretti, Ermes, 3,878,996.
Dall'Argine, Gianfranco; and Ghiretti, Ermes, to Dall'Argine & Ghiretti s.n.c., Stradella De Collecchio. Shredding machine for tomato pulp intended for canning in the raw state. 3,878,996, Cl. 241-84.200.
Damlamian, Jean J. Apparatus for the visual display of inscriptions on transparencies. 3,879,117, Cl. 353-19.000.
Danchulis, James E.; and Rankin, Paul B., Jr., to Aluminum Company of America, a part interest. Paddle ball racquet construction. 3,879,035, Cl. 273-73.00C.
Daniels, Peter J. L., to Schering Corporation. Process for the preparation of garamine and derivatives thereof. 3,879,375, Cl. 260-210.00R.
Darling, Michael E. Sofa bed construction. 3,879,598, Cl. 219-217.000.
Date, Tasuku; and Sato, Yasuhito, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine with prechamber. 3,878,826, Cl. 123-32.0ST.
Dauvergne, Hector A. Heat injection engine apparatus. 3,878,680, Cl. 60-511.000.
Daves, Howard W., to Aluminum Company of America. Strip winding apparatus. 3,878,999, Cl. 242-56.900.
Davies, Derec Fay Vaughan, to Deister Concentrator Company Inc. Concentrator. 3,879,284, Cl. 209-441.000.
Davila, Jose E.: *See—*
Mojden, Wallace W.; Davila, Jose E.; Hooper, George W.; Kwiatkowski, Gerald M., and Pantel, Howard W., Jr., 3,878,945.
Davis, Robert Newton; Laverman, Royce Jay; and LaFave, Ivan Vallier, to Chicago Bridge & Iron Company. Foam board insulation system. 3,878,658, Cl. 52-410.000.
Davison, Raymond, to Imperial Chemical Industries Limited. Filtration process. 3,879,291, Cl. 210-231.000.
Dawes, Dag; and Boehner, Beat, to Ciba-Geigy Corporation. 1-(4-Chlorophenyl)-5-methyl-3-(0,0-diethylthiono phosphoryl)-1,2,4-triazole. 3,879,412, Cl. 260-308.00R.
Day, Douglas B. Helicopter rescue hoist, static electric shock insulator. 3,879,638, Cl. 317-2.00R.
De Beers Industrial Diamond Division Limited: *See—*
Levitt, Charlie Maurice, 3,879,175.
De Bell, Lawrence R.; and Price, David D., Jr., to Economy Company, The. Automatic drive stop control utilizing motor voltage transients. 3,879,756, Cl. 360-74.000.
De Boer, Jacob, to U.S. Philips Corporation. Compensation of timing errors in a color video signal. 3,879,748, Cl. 358-8.000.
Debrie, Roger Lucien: *See—*
Riviere, Eugene; Vilarel, Danyele Yvette; Debrie, Roger Lucien; and Loiseau, Gerald Paul Marie Henri, 3,879,549.
DeBrunner, Marjorie Ruth; and Verbanc, John Joseph, to du Pont de Nemours, E. I., and Company. Stabilizing hydrocarbon copolymers of bicyclic monomers against gelation during bulk processing. 3,879,343, Cl. 260-45.70S.
de Bruyn, Gerrit C.: *See—*
de Vries, Gerbertus H.; and de Bruyn, Gerrit C., 3,879,173.
DeFelice, Victor A., to Raymond Lee Organization, Inc., The, a part interest. Modular demonstrator. 3,878,624, Cl. 35-19.00R.
Dehn, William R.: *See—*
Peterson, John I.; Chrambach, Andreas; Holland, Julian W., Jr.; Dehn, William R.; and Swank, H. Douglas, 3,879,280.
Deister Concentrator Company Inc.: *See—*
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De Jong, Maarten Cornelis: *See—*
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De Koning, Jan, to N.V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal". Apparatus for loading a hopper of a suction dredger with sand. 3,878,946, Cl. 214-15.00B.
Delew, Richard Brandt, to Varian Associates. Flame photometric detector employing premixed hydrogen and oxygen gases. 3,879,126, Cl. 356-87.000.
Deli, Joseph; and Lavanish, Jerome M., to PPG Industries, Inc. Herbicidal chlorinated benzyl alcohols. 3,879,476, Cl. 260-618.00D.
De Luca, Hector F.; and Jorgensen, Neal A., to Wisconsin Alumni Research Foundation. Method of treating milk fever in dairy cattle with 1-alpha-hydroxycholecalciferol. 3,879,548, Cl. 424-236.000.
De Luca, Norman C.; and Mizikar, Eugene A., to Jones & Laughlin Steel Corporation. Non-warping heat shield. 3,879,167, Cl. 432-249.000.
de Man, Heiko T., to Velo-Bind, Inc. Method for simultaneously cutting and heading plastic studs. 3,879,063, Cl. 281-21.00R.
Demars, Jimmy A.: *See—*
Clark, James P.; Demars, Jimmy A.; and Wilson, Gerald G., 3,879,431.
Denki Onkyo Co., Ltd.: *See—*
Toyoda, Moriaki, 3,879,755.
Dennhardt, Werner: *See—*
Schroter, Herbert; and Dennhardt, Werner, 3,879,125.
Deronzier, Jean Claude; Foulletier, Louis; Huyghe, Jean; and Niezborala, Jean Marc, to Commissariat a l'Energie Atomique; and Societe Produits Chimiques Ugine-Kuhlmann. Method for causing condensation in drops on heat exchanger tubes. 3,878,885, Cl. 165-1.000.
De Rooij, Abraham H.; and Goettsch, Reijer, to Stamicarbon, B.V. Process for recovery of lactam. 3,879,380, Cl. 260-239.30A.
DeSoto Inc.: *See—*
Sekmakas, Kazys; and Yates, Robert O., 3,879,340.
Deutsch, Albert S., to GAF Corporation. Alkyl thio ether-substituted benzanthrone acridene dyestuffs. 3,879,397, Cl. 260-274.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Hensel, Jorg; Schaefer, Gerd; and Schreyer, Gerd, 3,879,457.
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Albein, Klaus; Imbery, Dieter; and Oesterle, Hanspeter, 3,878,854.
Developmental Design, Inc.: *See—*
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De Villiers, Octave D'Hotman; and Hussain, Aziz, to Hyesons Sugar Mills Limited. Compartmentalized vacuum pan for crystallization of sugar. 3,879,215, Cl. 127-16.000.
de Vries, Gerbertus H.; and de Bruyn, Gerrit C. Crystalliser for continuously obtaining of crystals. 3,879,173, Cl. 23-301.00R.
Dewhurst, Alan, to Dewhurst & Partner Limited. Elevator car door operating and locking device. 3,878,919, Cl. 187-52.000.
Dewhurst & Partner Limited: *See—*
Dewhurst, Alan, 3,878,919.
Diagnostic Instruments, Inc.: *See—*
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Anderson, Robert E., 3,879,521.
Meyers, William J., Jr., 3,879,536.
Schaaf, Kurt H., 3,879,456.

Dickey, John W., to Harrington-Research Corporation. Method of heat sealing and holding package closure elements. 3,879,247, Cl. 156-272.000.

Diefenbach, Horst: *See—*
Storck, Gerhard; Diefenbach, Horst; Marx, Matthias; Nagel, Otto; Kuerten, Heribert; and Weinle, Werner, 3,879,335.

DIEHL datensysteme GmbH: *See—*
Burkhardt, Gottfried; Metschnabl, Andreas; and Greppmaier, Paul, 3,878,781.

Dietch, Leonard, to Zenith Radio Corporation. High-brightness, high-contrast cathode-ray tube faceplate panel. 3,879,632, Cl. 313-474.000.

Digi-Gard, Inc.: *See—*
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Dillard, Paul A., to United States of America, Army. Flat element spring. 3,879,025, Cl. 267-165.000.

Dimitroff, Vladimir T.: *See—*
Baker, Jack M.; Dimitroff, Vladimir T.; Mizen, Lawrence R.; and Gray, Russell A., 3,879,616.

Dirks, Richard D., to Josam Manufacturing Co. Liquid line shock absorber. 3,878,867, Cl. 138-30.000.

Diskus, Alfred; Schonbeck, Rupert; Kloimstein, Engelbert; and Mayr, Hubert, to Osterreichische Stickstoffwerke Aktiengesellschaft. Phenylpyridazines and the preparation thereof. 3,879,391, Cl. 260-250.00A.

Dixon, Eileen M., executrix: *See—*
Dixon, Kenneth Raymond, deceased; and Sugden, David Burnett, 3,879,154.

Dixon, Kenneth Raymond, deceased (by Dixon, Eileen M., executrix); and Sugden, David Burnett, to Improved Mechanical Products Pty. Ltd. Gear type fluid motor or pump having fluid pressure compensating means. 3,879,154, Cl. 418-71.000.

Dobbin, Donald Patrick; Fritsch, Charles Anthony; and Sabia, Raffaele Antonio, to Bell Telephone Laboratories, Incorporated. Encapsulating compound and closure. 3,879,575, Cl. 174-92.000.

Dobson, Philip Richard, to Gilbert Gray & Co. Pty. Limited. Core sampling device. 3,878,904, Cl. 175-236.000.

Doerr, L. John, III: *See—*
Bailey, Paul T.; and Doerr, L. John, III, 3,879,716.

Doll, Brendan L., to Cellu Products Company. Apparatus for forming corner pads. 3,879,253, Cl. 156-443.000.

Domergue, Annick Marthe Suzanne Simone; and Sureau, Robert Frederic Michel, to Produits Chimiques Ugine Kuhlmann. 3-4-(Pyrazole-1-yl)-3-halophenyl-7-alkoxy coumarin derivatives. 3,879,417, Cl. 260-310.00R.

Donald, Dennis Scott, to du Pont de Nemours, E. I., and Company. 2,3-Dichloro-5,6-dicyanopyrazine and derivatives. 3,879,394, Cl. 260-250.0BN.

Donnelly, Charles J. Environmental control attachment and crib. 3,878,570, Cl. 5-97.000.

Donzel, Alain: *See—*
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Douglas, Paul S.: *See—*
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Dow Chemical Company, The: *See—*
Best, John S., 3,878,887.
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Farber, Hugh A., 3,879,471.
Greminger, George K., Jr.; and Johnson, Earl H., 3,879,365.
Hay, Robert A., II, 3,879,254.
Hinkamp, Paul E.; and Foye, Duane F., 3,879,359.
Jones, Giffin D., 3,879,328.
Klein, Dieter H., 3,879,333.
Olstowski, Franciszek; and Parrish, Donald B., 3,879,329.
Pearce, Roscoe L.; and Wisniewski, David F., 3,879,023.
Pews, Richard Garth; McKendry, Lennon H.; and Rodia, Ralph M., 3,879,387.
Tobol, Helen K., 3,879,553.
Wieland, Denton R.; and Woods, Bobby L., 3,878,895.

Dow Corning Corporation: *See—*
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Drabek, Jozef: *See—*
Beriger, Ernst; and Drabek, Jozef, 3,879,499.

Draghi, James A., to M. H. Rhodes, Inc. Blender apparatus having manual preset timer actuating device. 3,879,587, Cl. 200-35.00R.

Dragon, Thomas J., to Burroughs Corporation. Automatic gain control circuit. 3,879,674, Cl. 330-29.000.

Draper, James R.: *See—*
Goodhart, Frank W.; and Draper, James R., 3,879,511.

Dresser Industries, Inc.: *See—*
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Drexelbrook Controls, Inc.: *See—*
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Driscoll, Aelred D.: *See—*
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Filreis, Manuel; and Driscoll, Aelred D., 3,879,574.

Du Pont of Canada Limited: *See—*
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Dubinsky, Rudolf Solomonovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Boiko, Georgy Alexandrovich; Egorov, Sergei Petrovich; Kumysh, Ilya Iosifovich; and Popov, Lev Vasilievich, 3,878,882.

Du-Chambon, Michel G. J., to Locaner. Rotary furnace and coaxial ash-receiver incineration device. 3,878,798, Cl. 110-14.000.

Duennenberger, Max: *See—*
Schellenbaum, Max; Duennenberger, Max; and Casagrande, Fulvio, 3,879,477.

Duerre, Dennis L. Bathroom body, hand, and hair drier. 3,878,621, Cl. 34-90.000.

Dulux Australia Ltd.: *See—*
Gunning, Raymond Harry; Henshaw, Bruce Collins; and Lubbock, Frederick John, 3,879,314.

Dumas, Guy H., to Silec-Semi-Conducteurs. Bidirectional thyristor. 3,879,744, Cl. 357-39.000.

Dunn, David S., to Honeywell Information Systems, Inc. Phase locked loop clocking system. 3,879,753, Cl. 360-51.000.

du Pont de Nemours, E. I., and Company: *See—*
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Donald, Dennis Scott, 3,879,394.
Estes, Gerald Martin, 3,879,044.
Gervay, Joseph Edmund, 3,879,204.
Martin, Elmore Louis, 3,879,472.
Parker, David J., 3,879,331.
Woodell, Rudolph, 3,879,519.

Durand, Robert D., to International Business Machines Corporation. Gas display panel and method of making same. 3,879,629, Cl. 313-220.000.

Durden, John A.; and Sousa, Anthony A., to Union Carbide Corporation. 2-(Poly substituted phenyl)-1,3-indandione compounds. 3,879,468, Cl. 260-590.000.

Durecka, John, to Tektronix, Inc. Selectable rectified alternating voltage power supply. 3,879,649, Cl. 321-2.000.

DuRocher, Daniel J.: *See—*
DuRocher, Gideon A.; and DuRocher, Daniel J., 3,879,586.

DuRocher, Gideon A.; and DuRocher, Daniel J., to Essex International, Inc. Tactile keyboard switch assembly with metallic or elastomeric type conductive contacts on diaphragm support. 3,879,586, Cl. 200-5.00A.

Dusheck, George James, Jr., to RCA Corporation. Energy peak/time averaging seismic intrusion detector. 3,879,720, Cl. 340-261.000.

Dutton, Philip F. E.: *See—*
Underwood, John D.; and Dutton, Philip F. E., 3,879,276.

Duval Corporation: *See—*
Atwood, George E.; and Curtis, Charles H., 3,879,272.

Duwe, Edward C.; and Duwe, William E. Modular mausoleum crypt system. 3,878,656, Cl. 52-134.000.

Duwe, William E.: *See—*
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Dyachkovsky, Fridrikh Stepanovich: *See—*
Belov, Gennady Petrovich; Dzhabiev, Taimuraz Savelievich; Dyachkovsky, Fridrikh Stepanovich; Smirnov, Vyacheslav Ivanovich; Karpova, Nelli Dzhavkharovna; Brikenshtein, Khaim-Mordkhe Aronovich; Gerasina, Matrena Petrovna; Kuzmin, Vladimir Evgenievich; Matkovsky, Petr Evgenievich; Russiyan, Ljudmila Nikolaevna; Pomogailo, Anatoly Dmitrievich; and Chirkov, Nikolai Mikhailovich, deceased, 3,879,485.

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Nestler, Heinz; Amort, Jurgen; and Plankl, Leo Hans, 3,879,206.

Dyrberg, Ingvald; and Eriksson, Algot Ingemar, to AB Printing Equipment. Method of fastening a printing plate on a cylinder in a printing press and device for said fastening. 3,878,784, Cl. 101-415.100.

Dzhabiev, Taimuraz Savelievich: *See—*
Belov, Gennady Petrovich; Dzhabiev, Taimuraz Savelievich; Dyachkovsky, Fridrikh Stepanovich; Smirnov, Vyacheslav Ivanovich; Karpova, Nelli Dzhavkharovna; Brikenshtein, Khaim-Mordkhe Aronovich; Gerasina, Matrena Petrovna; Kuzmin, Vladimir Evgenievich; Matkovsky, Petr Evgenievich; Russiyan, Ljudmila Nikolaevna; Pomogailo, Anatoly Dmitrievich; and Chirkov, Nikolai Mikhailovich, deceased, 3,879,485.

E. H. Sheldon and Company: *See—*
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E. R. Squibb & Sons, Inc.: *See—*
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Beer, Bernard; Clody, Donald E.; Horovitz, Zola P.; and Vogel, John R., 3,879,512.
Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., 3,879,414.

E-Systems, Incorporated: *See—*
Holmes, Lloyd H., 3,879,090.

East, Peter William, to U.S. Philips Corporation. Digital data handling system. 3,879,727, Cl. 343-5.0DP.

Easter, Ross A.: *See—*
Ryan, Jack A.; Easter, Ross A.; and Rejsa, Jack J., 3,878,943.

Eastman Kodak Company: *See—*
Ames, William A.; Ward, James J.; and Carter, Edward H., Jr., 3,879,352.
Barkey, Kenneth T.; and May, Douglas C., 3,879,341.
Blood, Alden E.; and Hagemeyer, Hugh J., Jr., 3,879,446.
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Eckerbrecht, James Louis, to Arcan Eastern Limited. Connector mechanism. 3,879,144, Cl. 403-232.000.

Ecklin, John W. Permanent magnet motion conversion device. 3,879,622, Cl. 310-80.000.

Ecodyne Corporation: *See—*
Furlong, Donn B.; and Luzaich, Samuel, 3,879,502.
Economics Laboratory, Inc.: *See—*
Nystuen, Marcus I.; and Johnson, Roger A., 3,879,657.
Economy Company, The: *See—*
De Bell, Lawrence R.; and Price, David D., Jr., 3,879,756.
Econopal Inc.: *See—*
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Edenhofer, Albrecht, to Hoffmann-La Roche Inc. Tetrahydropyridine derivatives. 3,879,405, Cl. 260-294.80F.
Edge, Gordon; and Worthington, George, to Plessey Handel und Investments A.G. Data processing system fault diagnostic arrangements. 3,879,712, Cl. 340-172.500.
Edo Corporation: *See—*
Pepper, Perry Arnold, 3,879,698.
Pepper, Perry Arnold, 3,879,699.
Edwards, Allen Ponsford, to Hewlett-Packard Company. Converter circuit. 3,879,668, Cl. 328-145.000.
Ege, Werner K. E.: *See—*
Iliopulos, Miltiadis I.; and Ege, Werner K. E., 3,879,498.
Egli, Bruno; and Manser, Niklaus, to Labtronic, AG. Photometer circuitry for the digital indication of the light absorption of a test sample and for automatically obtaining null balance. 3,879,135, Cl. 356-206.000.
Egly, Richard S.: *See—*
Chandler, Ollie W.; and Egly, Richard S., 3,879,478.
Egorov, Sergei Petrovich: *See—*
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Ehlen, Jack W.; and Bailey, Jay R., to McCulloch Corporation. Chain saws. 3,878,607, Cl. 30-387.000.
Ehrlich, Melville, to Mobil Oil Corporation. Grease thickened with oxygen-linked or sulfur-linked polyureas. 3,879,305, Cl. 252-47.500.
Ehrlich, Stephen Jeffrey, to Black & Decker Manufacturing Company, The. Electrical device handle and protector therefor. 3,879,573, Cl. 174-46.000.
Eigenmann, Ludwig. Grazing light reflector for roadway pavement markers. 3,879,148, Cl. 404-10.000.
Einstman, William J.; Rehman, Warren C.; and Plant, Frank M., to General Foods Corporation. Coffee brewing bag and method. 3,879,565, Cl. 426-302.000.
Elco Industries, Inc.: *See—*
Gutshall, Charles E., 3,878,740.
Elderbaum, Gilbert James. Method of producing thin ceramic sheets with minimal distortion. 3,879,509, Cl. 264-56.000.
Electric Power Storage Limited: *See—*
Peters, Kenneth, 3,879,217.
Electricity Council, The: *See—*
Hodgett, David Lowry; Fung, Harry; and Lawton, James, 3,878,619.
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Seidl, Pavel; and Mladek, Milos, 3,878,671.
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Dahl, Erik Qvale, 3,879,514.
Ellerton, Norman Vaughan; Paradise, William Frederick; and Sandord, Peter Edgar, to Glaxo Laboratories Limited. Salts of a monophosphonic acid and a monoamine. 3,879,398, Cl. 260-290.0HL.
Elliott, James Francis; and Johnson, Joel Swenum, to International Business Machines Corporation. Data storage mechanism having a flexible magnetic disk. 3,879,757, Cl. 360-99.000.
Ellis, Gaylor O.; Halat, John A.; and Sawhney, Girish B., to Sperry Rand Corporation. Fluid operated contaminant trap. 3,879,294, Cl. 210-354.000.
Elrich, Ralph R.: *See—*
Watkinson, John; and Elrich, Ralph R., 3,879,315.
Emelyanenko, Vladimir Vasilievich: *See—*
Samatov, Jury Petrovich; Emelyanenko, Vladimir Vasilievich; Litvinov, Nikolai Alexandrovich; Kavyarov, Ivan Savvateevich; and Kajukov, Vladimir Konstantinovich, 3,878,912.
Enders, Edgar; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Fungicidally active 3-amino-propionic acid chloroanilides. 3,879,539, Cl. 424-324.000.
Engel, William Karl, to Caterpillar Tractor Company. High pressure radial piston fluid translating device and cylinder construction therefor. 3,878,767, Cl. 91-490.000.
Engelhard Minerals & Chemicals Corporation: *See—*
Mercade, Venancio V., 3,879,283.
Eppe, Rudolf; Fryda, Georg; Mullritter, Ludwig; Schnall, Gunther; Schrecke, Hans-Joachim; Pfeifer, Josef; and Abbe, Gunther. Apparatus for removing remnants of powder images in electrophotographic copying machines. 3,879,124, Cl. 355-15.000.
Epstein, Henry David; and Broadley, William A., to Texas Instruments Incorporated. Motor starting system including thermal responsive means for selectively disrupting the power being supplied to the start winding. 3,879,685, Cl. 318-221.00H.
Erdmenger, Rudolf: *See—*
Wingler, Frank; Muller, Richard; Wassmuth, Gerd; Erdmenger, Rudolf; and Ullrich, Martin, 3,879,357.
Erickson, Mark E., to North Face, The. Sleeping bag and method of fabricating same. 3,878,574, Cl. 5-343.000.
Erickson Tool Company: *See—*
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Eriksson, Algot Ingemar: *See—*
Dyrberg, Ingvald; and Eriksson, Algot Ingemar, 3,878,784.
Eriksson, Eleon Gustav. Collecting device for solid or liquid waste material. 3,878,572, Cl. 4-142.000.
Esbelin, Jean. Orthopedic chair. 3,878,840, Cl. 128-70.000.
Escher Wyss Limited: *See—*
Schneider, August Johannes, 3,879,296.
Eskeli, Michael. Turbine. 3,879,152, Cl. 415-80.000.
Essex International, Inc.: *See—*
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Estes, Gerald Martin, to du Pont de Nemours, E. I., and Company. Reinforced elastomeric o-ring with improved compression set. 3,879,044, Cl. 277-227.000.
Ethyl Corporation: *See—*
Felt, Arthur E., 3,879,628.
Hinkamp, James B.; and Hnizda, Vincent F., 3,879,454.
Etter, Marcel. Undulator. 3,879,651, Cl. 321-45.00C.
Europatent S.A.: *See—*
Burgers, August, 3,878,647.
Evans, Wilbur F.: *See—*
Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 3,879,188.
Ewald, John F.: *See—*
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Extracorporeal Medical Specialties Inc.: *See—*
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Exxon Research and Engineering Company: *See—*
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Burke, Oliver W., Jr., 3,879,327.
Eyelet Specialty Company: *See—*
Schultz, Robert S., 3,878,975.
Faigen, Harry L., to Amchem Products, Inc. Coating compositions for stainless steels. 3,879,237, Cl. 148-6.240.
Faller, Hermann, to Gebr. Faller AG. Lighting systems for vehicles. 3,879,617, Cl. 307-10.0LS.
Far-Mar-Co., Inc.: *See—*
Gerrish, Oliver B., Sr.; and Rao, Ganta V., 3,879,373.
Farber, Hugh A., to Dow Chemical Company, The. Polyethers having α-halothioether side chains. 3,879,471, Cl. 260-609.00R.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,879,379.
Farmer, Stanley F., to Cascade Corporation. Load clamping mechanism with limited play in arms. 3,878,769, Cl. 92-51.000.
Farr, Glyn Phillip Reginald, to Girling Limited. Brake adjusters. 3,878,923, Cl. 188-196.00D.
Farrington, Gregory C., to General Electric Company. Sealed primary sodium-halogen cell. 3,879,219, Cl. 136-83.00R.
Farrington, Gregory C., to General Electric Company. Sealed primary sodium-halogen cell. 3,879,221, Cl. 136-83.00R.
Farrington, Gregory C.; and Lord, Peter C., to General Electric Company. Sealed primary sodium-halogen cell. 3,879,223, Cl. 136-83.00R.
Farrington, Gregory C.; and Lord, Peter C., to General Electric Company. Sealed primary sodium-halogen cell. 3,879,224, Cl. 136-83.00R.
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Favier, Charles; Le Go, Roland; and Tournier, Edmond. Method and device for the automatic selection of chromosome images during metaphase. 3,879,706, Cl. 340-146.30R.
Fawn Engineering Co.: *See—*
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Federal Pacific Electric Company: *See—*
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Fehrs, Delmer Lee: *See—*
Cuthbert, John David; Fehrs, Delmer Lee; and Munro, David Farnham, 3,879,131.
Felt, Arthur E., to Ethyl Corporation. Spark plug. 3,879,628, Cl. 313-141.000.
Fenton, Geoffrey: *See—*
Lacjak, Richard Andrew; and Fenton, Geoffrey, 3,879,011.
Fertl, Walter H.; and Reynolds, Edward B., to Continental Oil Company. Determination of residual oil in a formation. 3,878,890, Cl. 166-252.000.
Ferver, George W. Sealing device and burial vault. 3,878,657, Cl. 52-139.000.
Fetherston, William H.; and Teeter, Roger C., to Composite Structures Corporation. Method of making composite cored structures. 3,879,245, Cl. 156-245.000.
Fiat Societa per Azioni: *See—*
Boaron, Massimo, 3,879,711.
Fichtel & Sachs AG: *See—*
Schulz, Horst, 3,878,737.
Filreis, Manuel; and Driscoll, Aelred D., to Minnesota Mining and Manufacturing Company. Cable enclosure. 3,879,249, Cl. 156-215.000.
Filreis, Manuel; and Driscoll, Aelred D. Cable splice enclosure. 3,879,574, Cl. 174-76.000.
Findeisen, Bennie A., to General Electric Company. Improved convergence and triad distortion correction means for wide angle cathode ray tube. 3,879,635, Cl. 315-368.000.

Fine, Chauncey M.: *See*—
Nelson, William L.; and Fine, Chauncey M., 3,879,213.

Firestone Tire & Rubber Company, The: *See*—
Halasa, Adel Farhan, 3,879,367.
McGillvary, Daniel Ross, 3,879,161.

Firm of Dock & Dock, The: *See*—
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Fischer and Porter Co.: *See*—
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Fischer, Robert Frederick: *See*—
Bobeck, Andrew Henry; Fischer, Robert Frederick; Geusic, Joseph Edward; and Nelson, Terence John, 3,879,585.

Fish, Leslie A. Printer with vaccum device for holding film for printing. 3,878,775, Cl. 101-41.000.

Fish, Samuel Eugene: *See*—
Sodder, George, Jr.; Fish, Samuel Eugene; and Palmer, Oliver Ellsworth, 3,879,088.

Fishbein, John; Bell, Raymond W. H.; and Clarke, Anthony J. Polyurethane foams. 3,879,316, Cl. 260-2.5AW.

Fisher, Merritt J. Dry roasting milo. 3,879,570, Cl. 426-466.000.

Fisher, William G., to Powell, B. J. Copy machine. 3,879,123, Cl. 355-14.000.

Fisons Limited: *See*—
Cairns, Hugh; and Minshull, Robert, 3,879,411.

Fitzgerald, Maurice J.; and Taylor, Lloyd D., to Polaroid Corporation. Method of preparing photosensitive silver halide emulsions. 3,879,205, Cl. 96-114.000.

Fleetwood Systems, Inc.: *See*—
Mojden, Wallace W.; Davila, Jose E.; Hooper, George W.; Kwiatkowski, Gerald M.; and Pantel, Howard W., Jr., 3,878,945.

Fleischmann, Martin: *See*—
Backhurst, John Rayner; Goodridge, Francis; Plimley, Raymond Ernest; and Fleischmann, Martin, 3,879,225.

Flick, Joseph J., to Bivins, Oliver W., a part interest. Double suction cup vacuum holder. 3,879,005, Cl. 248-206.00R.

Flower, Alva E. Quick change fishhook. 3,878,637, Cl. 43-44.830.

FMC Corporation: *See*—
McCarthy, Richard H., 3,878,922.
Reimers, James L., 3,878,932.

Fogle, Marlin E., to Q-V.S. Inc. Case and handle. 3,878,964, Cl. 220-96.000.

Folta, Alfred: *See*—
Bettin, Hubertus; and Folta, Alfred, 3,879,713.

Ford Motor Company: *See*—
Humenik, Michael, Jr.; and Moskowitz, David, 3,878,592.
Vartanian, Richard D., 3,878,823.

Forsberg, John Wesley, to Lubrizol Corporation, The. Adhesives prepared from aminoplast compositions and polymers of water-soluble hydroxyalkylated and alkoxyalkylated compositions and the like derived from N-3-oxohydrocarbon-substituted acrylamides. 3,879,325, Cl. 260-29.4UA.

Forsyth, George E., to Rohm and Haas Company. Organic amide containing compositions and process for thickening control of polyesters. 3,879,318, Cl. 260-16.000.

Foseco International Limited: *See*—
Lacjak, Richard Andrew; and Fenton, Geoffrey, 3,879,011.

Foster Grant Co., Inc.: *See*—
Shannon, James E.; and Westphal, Richard C., 3,879,321.

Foster, Robert Gilmer; and Cyboron, Richard David, to Combustion Engineering, Inc. Multi-sensor radiation detector system. 3,879,612, Cl. 250-370.000.

Fotland, Richard A., to Horizons Incorporated. Electrophotography with a photoconductor coated fine mesh. 3,879,195, Cl. 96-1.00R.

Fouche, Jean Clement Louis: *See*—
Blondel, Jean-Claude Rene Georges; Fouche, Jean Clement Louis; and Gueremy, Claude Georges Alexandre, 3,879,551.

Foulletier, Louis: *See*—
Deronzier, Jean Claude; Foulletier, Louis; Huyghe, Jean; and Niezborala, Jean Marc, 3,878,885.

Fournier, Paul Richard, to Bell Telephone Laboratories, Incorporated. Gate metallization structure. 3,879,746, Cl. 357-71.000.

Fox, David A., to Westinghouse Electric Corporation. Synchronous demodulator circuit. 3,879,670, Cl. 329-50.000.

Foye, Duane F.: *See*—
Hinkamp, Paul E.; and Foye, Duane F., 3,879,359.

Francesco, Dornetti. Device for launching ball with varying trajectories. 3,878,828, Cl. 124-16.000.

Frank, John F., to R. L. Crain Limited. Process and apparatus for transferring separated material. 3,879,028, Cl. 270-52.000.

Franklin, Kenneth John; and Bates, Keith, to Medical Alginates Limited. Manufacture of alginic material. 3,879,168, Cl. 8-115.500.

Freedman, Gerald Allen. Plural-chamber condiment dispenser. 3,878,971, Cl. 222-142.600.

Freeman, Del Page. Hatchback automobile accessory. 3,879,080, Cl. 296-24.00R.

Freeman, Philip Martin, to Stanley Works, The. Level vial mount. 3,878,618, Cl. 33-379.000.

Fretwell, Richard D., to MI^2, Incorporated. Automatic direct access arrangement selector. 3,879,579, Cl. 179-2.0DP.

Frick, John G.; Andrews, Bethlehem K.; and Gautreaux, Gloria A., to United States of America, Agriculture. Introduction of a temporary stiffness into knitted cotton for stability during patterning. 3,879,169, Cl. 8-115.600.

Friebe, Kurt. Programmable pneumatic control system. 3,878,865, Cl. 137-608.000.

Fried, John H.: *See*—
Crabbe, Pierre; and Fried, John H., 3,879,438.

Friedrich, Hans-Helmut; Linhart, Helmut; and Wirth, Hermann Otto, to Ciba-Geigy Corporation. Thermoplastics with good antistatic properties and improved processing properties. 3,879,346, Cl. 260-45.95S.

Friksson, Erik Sture; and Ingemarsson, Gosta Ingemar, to Aktiebolaget Karlstads Mekaniska Werkstad. Apparatus for forming and washing a fibrous web. 3,878,698, Cl. 68-22.00R.

Fritsch, Charles Anthony: *See*—
Dobbin, Donald Patrick; Fritsch, Charles Anthony; and Sabia, Raffaele Antonio, 3,879,575.

Fritsch, Werner: *See*—
Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,879,379.

Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., to Amchem Products, Inc. Growth regulation process. 3,879,188, Cl. 71-86.000.

Fritz Kubler Zahlerfabrik: *See*—
Kubler, Fritz, 3,878,732.

Fritz, William Baird, to AMP Incorporated. Pluggable filter unit. 3,879,691, Cl. 333-79.000.

Frohberger, Paul-Ernst: *See*—
Enders, Edgar; and Frohberger, Paul-Ernst, 3,879,539.

Frommer, Werner; Puls, Walter; and Schmidt, Delf, to Bayer Aktiengesellschaft. Saccharase inhibitors. 3,879,546, Cl. 424-115.000.

Frossard, Joseph. Plant for compacting and crushing domestic rubbish. 3,878,774, Cl. 100-96.000.

Fryda, Georg: *See*—
Eppe, Rudolf; Fryda, Georg; Mullritter, Ludwig; Schnall, Gunther; Schrecke, Hans-Joachim; Pfeifer, Josef; and Abbe, Gunther, 3,879,124.

Fryer, Paul Raymond; and Throssell, Walter Robert, to International Computers Limited. Apparatus for assessing qualities of recorded characters. 3,879,708, Cl. 340-146.3AG.

Fuchs, Julius Jakob. Herbicidal allophanimidates. 3,879,190, Cl. 71-98.000.

Fugii, Chiaki. Center-pull brake. 3,878,920, Cl. 188-24.000.

Fuji Photo Film Co., Ltd.: *See*—
Kitajima, Masao; and Kondo, Asaji, 3,879,510.
Yamaguchi, Seiya, 3,879,202.

Fujii, Yoshikazu; Kato, Yasuyuki; Moritani, Masahiko; and Maruyama, Hiroaki, to Sumitomo Chemical Company, Limited. Impact-resistant rubber-modified plastics and process for producing the same. 3,879,495, Cl. 260-878.00R.

Fujinaka, Yasukatsu: *See*—
Matsui, Seiji; Fujinaka, Yasukatsu; and Yabuno, Yoshiaki, 3,879,759.

Fujita, Yasuhiro; Nagaoka, Takenori; and Simokawa, Yuji, to Mitsui Petrochemical Ind., Ltd. Process for the oxidative purification of dimethyl phthalates. 3,879,444, Cl. 260-475.00B.

Fukino, Kunihiro: *See*—
Saito, Yutaka; and Fukino, Kunihiro, 3,879,741.

Fuks, Robert, to Union Carbide Corporation. Synthesis of mono-di-, and tri-substituted amidines. 3,879,460, Cl. 260-564.00R.

Fukui, George M.: *See*—
Reisner, David B.; Ludwig, Bernard J.; Fukui, George M.; and Berger, Frank M., 3,879,544.

Fukuma, Daizo; Takeuchi, Seiji; and Shirota, Kensho, to Nissan Motor Company, Limited. Fuel binder for composite propellant. 3,879,322, Cl. 260-23.70R.

Fulkerson, Louis Clarke, to Airco, Inc. Apparatus for rotatably driving large cylindrical bodies. 3,879,019, Cl. 259-89.000.

Fung, Harry: *See*—
Hodgett, David Lowry; Fung, Harry; and Lawton, James, 3,878,619.

Furlong, Donn B.; and Luzaich, Samuel, to Ecodyne Corporation. Fill hanger. 3,879,502, Cl. 261-111.000.

Furukawa, Motoaki, to Nippon Selfoc Company Limited. Small fly's eye lens array. 3,879,110, Cl. 350-167.000.

Furukawa, Shogi; Sonoyama, Yuzo; and Ohi, Akira, to Daicel Ltd. Self-extinguishing polystyrene resin composition. 3,879,345, Cl. 260-45.95R.

Furuya, Katsuhiko: *See*—
Yanagidaira, Hidetaka; Kawai, Kazuo; Shintani, Sotokichi; and Furuya, Katsuhiko, 3,879,671.

Gaeddert, Melvin V.: *See*—
Holdeman, Adin F.; and Gaeddert, Melvin V., 3,878,959.

Gaertner, Max, to Fischer and Porter Co. Cross-flexure pivot for electronic differential pressure transmitter. 3,878,725, Cl. 73-398.00C.

GAF Corporation: *See*—
Deutsch, Albert S., 3,879,397.
Strobel, Albert Frederick, 3,879,443.

Gaffar, Abdul; and Kestenbaum, Richard Charles. Vaccines for the prevention of dental caries. 3,879,545, Cl. 424-92.000.

Gallahue, William M.; and Wells, Gilbert J., to Mount Hope Machinery Company. Method and apparatus for drying paper. 3,878,620, Cl. 34-41.000.

Gamble, John G., to Veeder Industries Inc. Electromagnetically powered drive for a high speed counter. 3,879,601, Cl. 235-92.00C.

Gamco Industries, Inc.: *See*—
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Gamm-Tech Inc.: *See*—
Shugarman, Alvin E.; Shugarman, Lynn E.; and Linder, Lowell E., 3,879,104.

Gammon, Geoffrey James; and Addleston, Phillip Lewis, to BP Chemical International Limited. Polymerisation process. 3,879,363, Cl. 260-92.80W.

Garcia, Emilio C. Cargo vessel flexibly sizable in accordance with its cargo. 3,878,806, Cl. 114-77.00R.

Garlock Inc.: *See—*
Cairns, James W., 3,879,301.
Schovee, John R., 3,879,001.

Garrett Corporation, The: *See—*
Steves, Ray R., 3,878,692.

Garrett, Garnett O'Brien: *See—*
Dahl, Rulon R.; and Garrett, Garnett O'Brien, 3,879,139.

Gasser, John Anton. Film transport system. 3,879,003, Cl. 242-188.000.

Gasson, Edward James; Korsnar, Thomas Charles; and Marrian, Stanley Frederic, to BP Chemical International Limited. Process for the production of acrylonitrile. 3,879,435, Cl. 260-465.300.

Gatos, Harry C.; Witt, August F.; and Lichtensteiger, Manfred, to Massachusetts Institute of Technology. Method of growing from solution materials exhibiting a peltier effect at the solid-melt interface. 3,879,235, Cl. 148-171.000.

Gatti, Louis; and Matthaei, Raymond George. Detergent bar made from mixed fatty acid derivatives. 3,879,309, Cl. 252-117.000.

Gattuso, Marion J., to Universal Oil Products Company. Vulcanization inhibiting thioformamidine compounds. 3,879,459, Cl. 260-564.00R.

Gattuso, Marion J.; and Arnold, Robert J., to Universal Oil Products Company. Vulcanization inhibiting compounds. 3,879,461, Cl. 260-565.000.

Gautreaux, Gloria A.: *See—*
Frick, John G.; Andrews, Bethlehem K.; and Gautreaux, Gloria A., 3,879,169.

Gayoso, Jose R. Permanent forms system. 3,879,008, Cl. 249-50.000.

Gebr. Dingerkus: *See—*
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Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
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Gebr. Faller AG: *See—*
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Geigy Chemical Corporation: *See—*
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Gemrich, Edwin G., II: *See—*
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General Dynamics Corporation: *See—*
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General Electric Company: *See—*
Arneson, Harold N.; and Heitlinger, Louis J., 3,878,833.
Baker, Jack M.; Dimitroff, Vladimir T.; Mizen, Lawrence R.; and Gray, Russell A., 3,879,616.
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General Foods Corporation: *See—*
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Sabadics, Joseph L.; and Ewald, John F., 3,878,991.

General Mills Chemicals, Inc.: *See—*
Clark, James P.; Demars, Jimmy A.; and Wilson, Gerald G., 3,879,431.
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General Mills Fun Group, Inc.: *See—*
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General Signal Corporation: *See—*
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Gentile, Victor R.; Hepford, Richard R.; Jappe, Nicholas A.; Roberts, Clifford J., Jr.; and Steward, Gunnar E., to Scott Paper Company. Absorbent unitary laminate-like fibrous webs and method for producing them. 3,879,257, Cl. 162-112.000.

Geo W. King Limited: *See—*
Turner, John, 3,878,793.

Geologic Associates, Inc.: *See—*
Hageman, John A.; Slagle, Floyd M.; and Throckmorton, Raymond T., Jr., 3,878,686.

George, Ernest R., to Raymond Lee Organization, Inc., The, a part interest. Still fishing lure. 3,878,636, Cl. 43-42.740.

Gerasina, Matrena Petrovna: *See—*
Belov, Gennady Petrovich; Dzhabiev, Taimuraz Savelievich; Dyachkovsky, Fridrikh Stepanovich; Smirnov, Vyacheslav Ivanovich; Karpova, Nelli Dzhavkharovna; Brikenshtein, Khaim-Mordkhe Aronovich; Gerasina, Matrena Petrovna; Kuzmin, Vladimir Evgenievich; Matkovsky, Petr Evgenievich; Russiyan, Ljudmila Nikolaevna; Pomogailo, Anatoly Dmitrievich; and Chirkov, Nikolai Mikhailovich, deceased, 3,879,485.

Geraudie, Pierre Daniel, to Hozelock Limited. Watering devices. 3,878,990, Cl. 239-236.000.

Gerrish, Oliver B., Sr.; and Rao, Ganta V., to Far-Mar-Co., Inc. Concentration and isolation of pentosans from wheat bran. 3,879,373, Cl. 260-209.00R.

Gervay, Joseph Edmund, to du Pont de Nemours, E. I., and Company. Two-layer photopolymerizable gravure resist film. 3,879,204, Cl. 96-83.000.

Gerwi A.G.: *See—*
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Gesellschaft fur Kernforschung m.b.H.: *See—*
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GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft: *See—*
Kralowetz, Bruno; and Grill, Hubert, 3,878,708.

Ghest, Robert C.; and Springer, John S., to Advanced Micro Devices, Inc. Serial-parallel multiplier using booth's algorithm with combined carry-borrow feature. 3,878,985, Cl. 235-164.000.

Ghiretti, Ermes: *See—*
Dall'Argine, Gianfranco; and Ghiretti, Ermes, 3,878,996.

Gibes, Richard J., to Caterpillar Tractor Company. Fender construction for wheel loaders. 3,879,059, Cl. 280-153.00R.

Gibson, James; and Webster, Colin James, to Imperial Chemical Industries Limited. Smoking mixture. 3,878,850, Cl. 131-2.000.

Giglberger, Dieter: *See—*
Wick, Richard; Bestenreiner, Friedrich; and Giglberger, Dieter, 3,879,122.

Gil-Castillo, Arturo. Removable denture connection. 3,878,608, Cl. 32-5.000.

Gilbert, Gordon H., to Gretna Fiberglass Fabricators, Inc. Method of making precisely positioned composite structure utilizing nonprecise fiberglassing techniques. 3,878,600, Cl. 29-460.000.

Gilbert Gray & Co. Pty. Limited: *See—*
Dobson, Philip Richard, 3,878,904.

Gilbert, John Harold, to Monsanto Chemicals Limited. Process for producing a corrugated foamed thermoplastic resin sheet. 3,879,508, Cl. 264-53.000.

Gilbert, William W. Tubular thermopile. 3,879,229, Cl. 136-208.000.

Gimelli, Joseph Julius. Court reporting dictating system and method. 3,879,751, Cl. 360-13.000.

Giono-Barber, Paulette, born Michel: *See—*
Thuillier, Yvonne; and Giono-Barber, Paulette, born Michel, 3,879,547.

Girling Limited: *See—*
Farr, Glyn Phillip Reginald, 3,878,923.

Giuffredi, Giancarlo, to Coster Tecnologie Speciali S.p.A. Dispensing pushbutton cap, particularly for aerosol containers. 3,878,976, Cl. 222-402.130.

Glaser, Charles Jerome; Theobald, Donald L.; and Glaser, James R. Endless belt conveyor system. 3,878,937, Cl. 198-203.000.

Glaser, James R.: *See—*
Glaser, Charles Jerome; Theobald, Donald L.; and Glaser, James R., 3,878,937.

Glaxo Laboratories Limited: *See—*
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Globe-Union Inc.: *See—*
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Glory Kogyo Kabushiki Kaisha: *See—*
Itoda, Masaru; and Kawabata, Tadayosi, 3,878,666.

Glover, Clyde P.; and O'Neill, Michael P., to Eastman Kodak Company. Vacutainer with positive separation barrier. 3,879,295, Cl. 210-516.000.

Gockler, Franz Josef, to Hubert Schell KG. Threaded connection seal. 3,879,071, Cl. 285-347.000.

Godard, Bruno; Laxour, Bernard; and Michon, Maurice, to Compagnie General d'Electricite. Gas laser. 3,879,681, Cl. 331-94.5PE.

Godfrey, Arthur W.: *See—*
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Goetschel, Charles T.: *See—*
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Goettsch, Reijer: *See—*
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Goetz, George G.: *See—*
Barkhoudarian, Sarkis; Johnson, Charles Bruce; and Goetz, George G., 3,879,700.

Goffart, Pierre R., to S.A.P.R.B. Societe Anonyme. Process and device for creating triggered stop barriers in mines and in various underground works. 3,878,897, Cl. 169-46.000.

Gogerty, John H., to Sandoz-Wander, Inc. Enhanced learning ability by use of thioridazine. 3,879,552, Cl. 424-247.000.

Golant, Benjamin; and Landry, Norman Richard, to RCA Corporation. Distributed transmission line filter. 3,879,690, Cl. 333-73.00S.

Goldberg, David P. Traction appliance permitting mobility. 3,878,842, Cl. 128-84.00C.

Golden, Michael E.; Pearlman, Marshall B.; and Ryan, John W., to Opsonar Organ Corporation. Endless record audio signal generator and means for playing record. 3,878,751, Cl. 84-1.280.

Goldschmidt AG, The: *See—*
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Goldsmith, Bernard. Apparatus for marking spherical articles. 3,878,762, Cl. 90-13.200.

Gomi, Yoshifumi, to Kabushiki Kaisha Suwa Seikosha. Printer. 3,878,778, Cl. 101-93.290.

Gondo, Hisashi; Takechi, Hiroshi; Abe, Mitsunobu; Namba, Kazuo; Masui, Hiroaki; Uehara, Norimasa; and Komiya, Kunihiko, to Nippon Steel Corporation. Method for producing non-ageing cold rolled steel sheets having good press-formability by continuous annealing. 3,879,232, Cl. 148-12.00C.

Goodhart, Frank W.; and Draper, James R., to Warner-Lambert Company. Tasteless methenamine mandelate in a stabilized vegetable oil suspension. 3,879,511, Cl. 424-35.000.

Goodridge, Francis: *See—*
Backhurst, John Rayner; Goodridge, Francis; Plimley, Raymond Ernest; and Fleischmann, Martin, 3,879,225.

Gordon, Maxwell: *See—*
Pachter, Irwin J.; and Gordon, Maxwell, 3,879,555.

Gorius, Daniel Louis Marie, to Pont-A-Mousson S.A. Constant-flow spray-gun coating machine. 3,878,815, Cl. 118-318.000.

Gostling, Peter Eric, to C. Evans & Sons Limited. Scaffold and like structures. 3,879,143, Cl. 403-49.000.

Goto, Atsuo, to Olympus Optical Co., Ltd. Microscope objective. 3,879,111, Cl. 350-216.000.

Gotz Metallbau GmbH: *See—*
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Gould Inc.: *See—*
Mao, George W., 3,879,009.

Gowdy, Harold William, to General Electric Company. Steam iron baffling. 3,878,628, Cl. 38-77.820.

Graham, MacKellar K.: *See—*
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Graviner (Colnbrook) Limited: *See—*
Kraty, Nigel P.; and Turner, Robert E., 3,879,667.

Gray, Roy A.; and Brady, Donnie G., to Phillips Petroleum Company. Monohaloalkenyl benzoates and trihaloalkyl benzoates. 3,879,445, Cl. 260-476.00R.

Gray, Russell A.: *See—*
Baker, Jack M.; Dimitroff, Vladimir T.; Mizen, Lawrence R.; and Gray, Russell A., 3,879,616.

Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., to Hooker Chemicals & Plastics Corporation. Friction element composition. 3,879,338, Cl. 260-38.000.

Greenman, James R.; and Pelky, Phillip J., to Pinecrest Engineering, Inc. Shrub protector. 3,878,643, Cl. 47-28.000.

Greenstein, Howard B. Method and apparatus for the operation of ring laser in a biased mode. 3,879,130, Cl. 356-106.0LR.

Gregory, M. Duane: *See—*
Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,878,894.

Greminger, George K., Jr.; and Johnson, Earl H., to Dow Chemical Company, The. Hydroxyethyl hydroxypropyl methylcellulose as a protective colloid in vinyl chloride polymerization. 3,879,365, Cl. 260-92.80R.

Grenci, Carl A. Liquefaction of natural gas by liquid nitrogen in a dual-compartmented dewar. 3,878,689, Cl. 62-9.000.

Greppmaier, Paul: *See—*
Burkhardt, Gottfried; Metschnabl, Andreas; and Greppmaier, Paul, 3,878,781.

Gretna Fiberglass Fabricators, Inc.: *See—*
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Grill, Hubert: *See—*
Kralowetz, Bruno; and Grill, Hubert, 3,878,708.

Grinan, Prudencio M. Selectively pivoted article lifter. 3,878,968, Cl. 221-274.000.

Grob, Alfred; Hans, Waldemar; and Staib, Helmut, to Robert Bosch G.m.b.H. Electromagnetic valve. 3,878,859, Cl. 137-270.000.

Grohmann, Klaus: *See—*
Schubert, Klaus; and Grohmann, Klaus, 3,878,602.
Stohr, Christian; Grohmann, Klaus; and Wagner, Stegbert O., 3,878,580.

Grosewald, Peter S.; and Shirback, Dennis G., to Airco, Inc. Composite cermet thin films. 3,879,278, Cl. 204-192.000.

Grube, John R., to General Mills Fun Group, Inc. Frame for supporting a needlework project. 3,878,629, Cl. 38-102.910.

Gruensfelder, Kurt, to K-F Industries, Inc. Portable methane monitor and alarm system. 3,879,717, Cl. 340-237.00R.

GTE Sylvania Incorporated: *See—*
Bonazoli, Robert P.; and Janvier, Charles R., 3,879,703.

Guarnero, Richard F.: *See—*
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Gueremy, Claude Georges Alexandre: *See—*
Blondel, Jean-Claude Rene Georges; Fouche, Jean Clement Louis; and Gueremy, Claude Georges Alexandre, 3,879,551.

Guerin, Robert J.: *See—*
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Guest, Andrew John: *See—*
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Guest, George W., to Sprague & Henwood, Inc. Heavy duty soil sampler. 3,878,906, Cl. 175-405.000.

Guillemont, Antony Roland: *See—*
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Guimier, Jacques A.; and Coutin, Pierre F., to R. Alkan & Cie. Memorizer for counting system. 3,879,642, Cl. 317-155.500.

Guinosso, Charles J.: *See—*
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Gulf & Western Manufacturing Company: *See—*
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Gulf & Western Manufacturing Company (Hastings): *See—*
Berry, Gordon C.; and Keithley, Harry E., 3,878,706.

Gulich, Hans-Adolf; and Schildhorn, Bernd, to Daimler-Benz Aktiengesellschaft. Driver cab for trucks. 3,878,914, Cl. 180-89.00A.

Gunning, Raymond Harry; Henshaw, Bruce Collins; and Lubbock, Frederick John, to Dulux Australia Ltd. Process of making porous polyester granules. 3,879,314, Cl. 260-2.50N.

Gunter, Heitmann, to Metallgesellschaft Aktiengesellschaft. Process for directly reducing materials containing iron oxide in a rotary kiln in concurrent flow operation. 3,879,193, Cl. 75-35.000.

Gustafson, Alan M.: *See—*
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Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
Hutgens, Jochen; and Adomat, Gunter, 3,879,180.

Gutshall, Charles E., to Elco Industries, Inc. Wrench socket assembly. 3,878,740, Cl. 81-121.00R.

Guttinger, Manfred: *See—*
Bauer, Kunibert; and Guttinger, Manfred, 3,878,933.

Guzzetta, Franklin H.; and Brown, Roy A., to Armco Steel Corporation. Method and apparatus for electropainting small articles. 3,879,277, Cl. 204-181.000.

Gwin, Edward S., to General Motors Corporation. Motor vehicle seat assembly. 3,879,082, Cl. 296-65.00R.

H. L. Fisher Mfg. Co., Inc.: *See—*
Melind, Julius J., 3,878,743.

Habermeier, Juergen: *See—*
Batzer, Hans; Habermeier, Juergen; and Porret, Daniel, 3,879,422.

Haboush, Nicholas M. Napkin holder. 3,878,966, Cl. 221-33.000.

Haede, Werner: *See—*
Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,879,379.

Hafner, Frederick F.: *See—*
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HAG Aktiengesellschaft: *See—*
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Haga, Ingvald: *See—*
Persson, Nils Olof; Suvanto, Antti; Tornblom, Lars; and Haga, Ingvald, 3,879,259.

Hagarty, John D., to S. C. Johnson & Son, Inc. 1,2,4-Oxadiazole and thiadiazole esters and compositions containing same. 3,879,407, Cl. 260-302.00D.

Hageman, John A.; Slagle, Floyd M.; and Throckmorton, Raymond T., Jr., to Geologic Associates, Inc. Grouting process. 3,878,686, Cl. 61-36.00R.

Hagemeyer, Hugh J., Jr.: *See—*
Blood, Alden E.; and Hagemeyer, Hugh J., Jr., 3,879,446.

Hajek, Thomas J., Jr., to Caterpillar Tractor Company. Check-type drain valve. 3,879,013, Cl. 251-144.000.

Hakansson, Sven Anders Samuel; and Moritz, Mats Inge, to Kommanditbolaget United Stirling (Sweden) AB & Co. Hot gas engine combustion chambers. 3,878,681, Cl. 60-517.000.

Halasa, Adel Farhan, to Firestone Tire & Rubber Company, The. Production of crystalline, high-vinyl polybutadiene. 3,879,367, Cl. 260-94.300.

Halat, John A.: *See—*
Ellis, Gaylor O.; Halat, John A.; and Sawhney, Girish B., 3,879,294.

Haldopoulos, Peter; and Jayachandra, Yemmanur, to Western Electric Company, Incorporated. Method of isothermally heating articles with radiation. 3,879,164, Cl. 432-10.000.

Hale, Clifford E., to Gulf & Western Manufacturing Company. Energy absorbing bumper guard. 3,879,075, Cl. 293-71.00R.

Hall, John B.; and Vock, Manfred, to International Flavors & Fragrances Inc. Ethylene acetal of 3-phenyl-4-pentenal. 3,879,425, Cl. 260-340.900.

Hall, Jon D. Apparatus for washing glassware. 3,878,856, Cl. 134-60.000.

Hall, Joshua D. Hand grenade support. 3,878,789, Cl. 102-64.000.

Hall, Mitchell Adam, to Monarch Tool and Manufacturing Company. Coin chute with destructible tokens. 3,878,930, Cl. 194-92.000.

Hallock, Robert L. Nail having wedge spreadable legs. 3,878,756, Cl. 85-23.000.

Halperin, Bernard I.; Manley, Gerald W.; and Poley, Neil M., to International Business Machines Corporation. Reflective deformographic target assembly. 3,879,630, Cl. 313-394.000.

Hamatani, Touru. Device for sampling inspection. 3,878,726, Cl. 73-421.00R.

Hamill, Samuel M., III; and Kilbane, James C. System for numerical control of a machine tool. 3,878,983, Cl. 235-151.110.

Hamilton, Billy Harold; La Porta, Frank Carl; and Schroeder, Robert Edward, to Bell Telephone Laboratories, Incorporated. DC to DC converter with regulation having accelerated soft start into active control region of regulation and fast response overcurrent limiting features. 3,879,647, Cl. 321-2.000.

Hamilton, Charles R.: *See—*
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Hamilton, Harold E.; and Soreghy, Ivan L., to Libbey-Owens-Ford Company. Process for treating a glass sheet bent to a relatively sharp angle. 3,879,184, Cl. 65-107.000.

Hamisch, Paul H., Jr., to Monarch Marking System Company, The. Label printing and applying apparatus. 3,878,783, Cl. 101-348.000.

Hamsher, James J., to Pfizer Inc. Isolation of 6-aminopenicillanic acid and salts thereof. 3,879,409, Cl. 260-306.70C.

Hancock Brick and Tile Company, The: *See—*
Schmunk, John D., 3,878,685.

Handziak, Louis J.; Qualey, John; Lynch, Patrick M.; and Wollenschlager, Donald C., to Joseph Schlitz Brewing Company. Machine operation detection apparatus. 3,878,745, Cl. 83-61.000.

Hans, Waldemar: *See—*
Grob, Alfred; Hans, Waldemar; and Staib, Helmut, 3,878,859.

Hansen, Peder M.; and Rockway, John W., to United States of America, Navy. Method and apparatus for determining near-field antenna patterns. 3,879,733, Cl. 343-100.0AP.

Hansen, Ralph C.; Vande Water, Rae E.; and Sherwin, Owen W., to Libbey-Owens-Ford Company. Adjustable shipping rack and means for securing flat sheets. 3,878,942, Cl. 206-454.000.

Hara, Yasuaki: *See—*
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Harashima, Kazuumi: *See—*
Segawa, Kiyoshi; Nakamura, Yasushi; Tokumitsu, Naoki; and Harashima, Kazuumi, 3,879,192.

Harman, Leonard Albert. Milking machinery control apparatus. 3,878,819, Cl. 119-14.080.

Harrington-Research Corporation: *See—*
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Harris, Jerome N.; Hoffman, Sanford G.; and Witte, John C., to Xerox Corporation. Imaging system. 3,878,816, Cl. 118-637.000.

Harrison, William A.: *See—*
Ariyan, Zaven S.; Kulka, Marshall; and Harrison, William A., 3,879,531.

Hartman, Christianus Johannes Maria, to U.S. Philips Corporation. Glass for a fibre-optical element. 3,879,207, Cl. 106-54.000.

Harvey, Merlin P.: *See—*
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Hasegawa, Jun: *See—*
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Hass, Duane K.; and Carr, John B., to Shell Oil Company. Control by isoxazoles of endoparasitic nematodes. 3,879,532, Cl. 424-272.000.

Hass, Duane K.: *See—*
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Hata, Kunio; Yokota, Kingo; Tsutsui, Yoshio; and Yamashita, Shoji, to Jujo Paper Co., Ltd. Biologically activating composition. 3,879,187, Cl. 71-77.000.

Haubner, Georg; Hofer, Walter; and Schwarz, Karl-Gunter, to Robert Bosch G.m.b.H. Internal combustion engine magneto ignition system of the shunt switch type. 3,878,824, Cl. 123-148.00E.

Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., to E. R. Squibb & Sons, Inc. Enol betaines of benzimidazoles. 3,879,414, Cl. 260-309.200.

Hauke, Robert C.: *See—*
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Havera, Herbert John, to Miles Laboratories, Inc. Derivatives of 1,3-disubstituted 2,4(1h,3h)-quinazolinediones. 3,879,393, Cl. 260-256.40Q.

Hawera Probst Kommanditgesellschaft Hartmetall-Werkzeugfabric Ravensburgh: *See—*
Schaumann, Dietrich, 3,878,905.

Hay, Robert A., II, to Dow Chemical Company, The. Fabrication apparatus for butt joining foam plastic billets. 3,879,254, Cl. 156-461.000.

Hayashi, Yutaka; and Tarui, Yasuo. Method for gain control of field-effect transistor. 3,879,688, Cl. 332-31.00T.

Hayashibara Company: *See—*
Yoshida, Mikohiko; and Hirao, Mamoru, 3,879,212.

Hayes, Bert W.: *See—*
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Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., to Hazelett Strip-Casting Corporation. Symmetrical synchronized belt-steering and tensioning system and apparatus for twin-belt continuous metal casting machines. 3,878,883, Cl. 164-278.000.

Hazelett Strip-Casting Corporation: *See—*
Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., 3,878,883.

Heath, Darrell R.; and Takekoshi, Tohru, to General Electric Company. Method for making aromatic bis(ether anhydride)s. 3,879,428, Cl. 260-346.300.

Heckmann, Werner, to Holstein & Kappert Maschinenfabrik Phonix G.m.b.H. Apparatus for evacuating vessels. 3,878,874, Cl. 141-114.000.

Heesen, Theodorus Jacobus, to Simon-Heesen B.V. Roller press. 3,879,157, Cl. 425-237.000.

Heibo, Ulf. Apparatus for cleaning tanks and the like. 3,878,857, Cl. 134-167.00R.

Heidecker, Robert F., to Iomec, Inc. Combined sector pulse and data detection system. 3,879,752, Cl. 360-40.000.

Heitlinger, Louis J.: *See—*
Arneson, Harold N.; and Heitlinger, Louis J., 3,878,833.

Helipebs Limited: *See—*
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Kobayashi, Yoshikazu, to Nitto Kohki Co., Ltd. Pipe coupling assembly usable for sanitary appliances. 3,879,065, Cl. 285-39.000.

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Kozinski, Richard R. Air brake hose coupling member construction. 3,879,066, Cl. 285-69.000.

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Kralowetz, Bruno; and Grill, Hubert, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft. Forging press. 3,878,708, Cl. 72-407.000.

Krantz, Donald. Structural steel handling device. 3,879,015, Cl. 254-131.000.

Kraty, Nigel P.; and Turner, Robert E., to Graviner (Colnbrook) Limited. Apparatus and methods for detecting physical parameters. 3,879,667, Cl. 328-6.000.

Kraus, Theodore C.; and Noack, Manfred G., to Olin Corporation. Method for preparing indazolone derivatives. 3,879,416, Cl. 260-310.00A.

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Kress, Herwig. Hydrostatic transmission. 3,878,768, Cl. 92-2.000.

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Lachowicz, Donald R.; and Holder, Charles B., to Texaco Inc. Nitrated polymers with saturated hydrocarbon backbone. 3,879,358, Cl. 260-80.780.

Lacjak, Richard Andrew; and Fenton, Geoffrey, to Foseco International Limited. Head boxes for ingot moulds. 3,879,011, Cl. 249-202.000.

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Lamb, Charles Carlisle T. Head and crown suspension for protective helmet. 3,878,562, Cl. 2-3.00A.

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Light, Kenneth K., to International Flavors & Fragrances Inc. Bicyclo-[2.2.2]octa-5,7-dien-2-ones and a process for their preparation. 3,879,466, Cl. 260-586.00C.
Lightstone, John Bernard; Van den Sype, Jaak Stefaan; and Mazzarella, Richard Benedict, to Union Carbide Corporation. Cryogenic explosive fragmentation. 3,878,787, Cl. 102-23.000.
Limburg, William W.: *See—*
Cressman, Paul J.; Limburg, William W.; and Pilato, Louis A., 3,879,275.
Limes, Robert W.; and Russell, Robert O., to Republic Steel Corporation. Process for preparing fast-setting aggregate compositions and products of low porosity produced therewith. 3,879,209, Cl. 106-58.000.
Lindback, Lars-Erik: *See—*
Andersson, Leif; and Lindback, Lars-Erik, 3,878,908.
Lindblad, Oskar Lenhart. Device for tightening of a belt forming part of a safety harness assembly for vehicles. 3,879,054, Cl. 280-150.0SB.
Linde Aktiengesellschaft: *See—*
Asztalos, Stefan, 3,878,691.
Linder, Lowell E.: *See—*
Shugarman, Alvin E.; Shugarman, Lynn E.; and Linder, Lowell E., 3,879,104.
Lindner, Ernst: *See—*
Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,879,379.
Lindsey, Sarah E.; and Saam, John C., to Dow Corning Corporation. Toughened thermoplastics containing polydiorganosiloxanes. 3,879,491, Cl. 260-827.000.
Linhart, Helmut: *See—*
Friedrich, Hans-Helmut; Linhart, Helmut; and Wirth, Hermann Otto, 3,879,346.
Lion Fat & Oil Co., Ltd.: *See—*
Toyoda, Sadao; Ogoshi, Toshiaki; and Maruyama, Minoru, 3,879,172.
Lionts, Donald C.; Armijo, George W.; and Mehall, Bernard F., to CLC Corporation. Generating system for an electric vehicle. 3,878,913, Cl. 180-65.00R.
Lippy Can Co., Ltd.: *See—*
Knize, Elmer J., 3,878,963.
Lipson, Menzie; Mayfield, Robert John; and Morgan, Irene Mary, to Commonwealth Scientific and Industrial Research Organization. Cigarette filters for the selective removal of ciliatoxic smoke components. 3,878,853, Cl. 131-262.00A.
Litton Systems, Inc.: *See—*
Purvis, John Colin, 3,878,688.
Litvinov, Nikolai Alexandrovich: *See—*
Samatov, Jury Petrovich; Emelyanenko, Vladimir Vasilievich; Litvinov, Nikolai Alexandrovich; Kavyarov, Ivan Savvateevich; and Kajukov, Vladimir Konstantinovich, 3,878,912.
Locaner: *See—*
Du-Chambon, Michel G. J., 3,878,798.
Lochet, Jean A.: *See—*
Bick, Maurice; and Lochet, Jean A., 3,879,269.
Lofmark, Bengt Gustav, to Telefonaktiebolaget L M Ericsson. Compensating circuit for an amplifier element, preferably for an operational amplifier included in an active filter. 3,879,675, Cl. 330-109.000.
Loiseau, Gerald Paul Marie Henri: *See—*
Riviere, Eugene; Vilarel, Danyele Yvette; Debric, Roger Lucien; and Loiseau, Gerald Paul Marie Henri, 3,879,549.
Lojek, Andrzej: *See—*
Krainski, Andrzej; Lendzion, Krzysztof; Lojek, Andrzej; and Wewior, Jerzy, 3,879,042.
Lopez, Pedro. Lock for operation by an axially bitted key. 3,878,700, Cl. 70-363.000.
Lord Corporation: *See—*
Manino, Louie G.; and Sexsmith, Frederick H., 3,879,337.
Lord, Peter C.; and Farrington, Gregory C., to General Electric Company. Sealed primary sodium-halogen cell. 3,879,222, Cl. 136-83.00R.
Lord, Peter C.: *See—*
Farrington, Gregory C.; and Lord, Peter C., 3,879,223.
Farrington, Gregory C.; and Lord, Peter C., 3,879,224.
Lotte, Andre, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Resiliently supported air bladder for biasing squeegees. 3,878,780, Cl. 101-119.000.
Lowe, Edward James; Wilson, Arthur; and Lubetkin, Stephen, to Albright and Wilson Limited. Roadstone. 3,879,214, Cl. 106-288.00B.
Lowe, James Brian: *See—*
Morris, Larry Roy; Miners, Frederick Barry; and Lowe, James Brian, 3,879,194.
Lubbock, Frederick John: *See—*
Gunning, Raymond Harry; Henshaw, Bruce Collins; and Lubbock, Frederick John, 3,879,3 :4.
Lubetkin, Stephen: *See—*
Lowe, Edward James; Wilson, Arthur; and Lubetkin, Stephen, 3,879,214.
Lubrizol Corporation, The: *See—*
Forsberg, John Wesley, 3,879,325.
Miller, Clark Ober, 3,879,308.
Lucien, Rene, to Recherches Etudes Production R.E.P. Electrohydraulic transducer amplifier with a plurality of control inputs, and associated methods. 3,878,866, Cl. 137-625.610.
Lucifer S.A.: *See—*
Stampfli, Harald, 3,879,068.
Ludwig, Bernard J.: *See—*
Reisner, David B.; Ludwig, Bernard J.; Fukui, George M.; and Berger, Frank M., 3,879,544.

Luh, Nancy N. R.; and Palmer, James K., to Massachusetts Institute of Technology. Process for dehydrating bananas and banana product. 3,879,568, Cl. 426-541.000.

Lum, David W.: *See—*
Schott, Stuart; Lum, David W.; and Mador, Irving L., 3,879,311.

Lummus Company, The: *See—*
Riegel, Herbert; and Schindler, Harvey D., 3,879,480.
Riegel, Herbert, 3,879,482.
Sze, Morgan C.; and Riegel, Herbert, 3,879,481.

Luna, Gilbert D. Arcuate escalator system. 3,878,931, Cl. 198-16.00R.

Lund, Robert S.; and Koss, Vernon J., to Pettibone Corporation. Method for producing and assembling cope and drag mold parts. 3,878,881, Cl. 164-37.000.

Lundborg, Hans Krister, to Nitro Nobel Aktiebolag. Propagation device and initiation system for low energy fuses. 3,878,785, Cl. 102-27.00R.

Lunde, George G., to Minnesota Mining and Manufacturing Company. Integrated electrographic recording and developing stylus assembly. 3,879,737, Cl. 346-74.0ES.

Lunn, David L. Seat belt vibrator. 3,878,838, Cl. 128-63.000.

Lustig, Stanley, to Union Carbide Corporation. Food wrap having low oxygen permeability and desirable elastic properties. 3,879,330, Cl. 260-31.80M.

Luthe, Helmut: *See—*
Binder, Hans; and Luthe, Helmut, 3,879,705.

Luttmann, Josef; and Schnuckel, Clemens, to Polysius AG. Fluid level monitoring device. 3,878,719, Cl. 73-304.00C.

Luxnat, Gustav Friedrich, to Metalcut International Incorporated. Cutting method and apparatus with saw blade deflection. 3,878,744, Cl. 83-27.000.

Luzaich, Samuel: *See—*
Furlong, Donn B.; and Luzaich, Samuel. 3,879,502.

Luzzi, John J.: *See—*
Ramey, Chester E.; and Luzzi, John J., 3,879,396.

Lynch, Patrick M.: *See—*
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Lynenwerk KG: *See—*
Ney, Robert; and Rhiem, Hans-Christoph, 3,879,518.

M. H. Rhodes, Inc.: *See—*
Draghi, James A., 3,879,587.

M & T Chemicals Inc.: *See—*
Bierman, Clarence R.; and Welks, John D., 3,879,238.

MacDonald, John D. Ice ski. 3,879,047, Cl. 280-11.120.

Mack, Richard B., to United States of America, Air Force. Impedance load for radar target cross section control element. 3,879,731, Cl. 343-18.00B.

MacKinnon, Malcom C.: *See—*
Seamans, James S.; Neuman, John A.; and MacKinnon, Malcom C., 3,879,095.

MacManus, John. Decorating head. 3,878,992, Cl. 239-553.000.

Mador, Irving L.: *See—*
Schott, Stuart; Lum, David W.; and Mador, Irving L., 3,879,311.

Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, to Hodogaya Chemical Co., Ltd. Process for preparing colored synthetic leather. 3,879,336, Cl. 260-37.00N.

Magic Dot, Inc.: *See—*
Larson, Willis A., 3,879,593.
Larson, Willis A., 3,879,618.

Main, George: *See—*
Carpenter, Roland Paul; Main, George; and Sutton, Anthony Hubert, 3,879,370.

Main, John E.; and Saunders, Arthur D., to General Electric Company. Inserting and removing arrangement for radio equipment and the like. 3,878,736, Cl. 74-527.000.

Majewicz, Wlodzimierz I. Toroidal fan. 3,879,151, Cl. 415-76.000.

Make, Siegfried: *See—*
Rambacher, Paul; and Make, Siegfried, 3,879,534.

Makowski, Max, to Maschinenfabrik Alfred Schmermund. Curve milling or curve grinding machines. 3,878,761, Cl. 90-13.900.

Malcolm, James A. Manufacture of paperboard cartons with liquid-proof liners. 3,878,771, Cl. 93-36.010.

Malmvig, Henrik, to Radiometer A/S. Apparatus for recording the progress of a titration. 3,879,604, Cl. 235-151.300.

Maltby, Frederick L., to Drexelbrook Controls, Inc. Probe responsive to conditions of material. 3,879,644, Cl. 317-246.000.

Mancone, Joseph G., to Sierra Research Corporation. Ultrasonic rodent control. 3,879,702, Cl. 340-15.000.

Manino, Louie G.; and Sexsmith, Frederick H., to Lord Corporation. Adhesive compositions. 3,879,337, Cl. 260-37.00N.

Manley, Gerald W.: *See—*
Halperin, Bernard I.; Manley, Gerald W.; and Poley, Neil M., 3,879,630.

Mann, James Urquhart: *See—*
Nudenberg, Walter; Harvey, Merlin P.; and Mann, James Urquhart, 3,879,497.

Mannesmann Aktiengesellschaft: *See—*
Vossen, Werner, 3,879,252.

Manning, Wilbur. Automatic orthographic projection device. 3,878,613, Cl. 33-18.00C.

Manns, Bernt Hugo, to Nordiska Maskinfilt Aktiebolaget. Roll-up door. 3,878,879, Cl. 160-273.000.

Manser, Niklaus: *See—*
Egli, Bruno; and Manser, Niklaus, 3,879,135.

Mansfield, Brian Michael: *See—*
Buckley, Norman Ian; and Mansfield, Brian Michael, 3,879,719.

Mao, George W., to Gould Inc. Mold for making objects. 3,879,009, Cl. 249-135.000.

Margen, Peter Heinrich Erwin, to Aktiebolaget Atomenergi. Apparatus for evaporating liquids. 3,879,265, Cl. 202-173.000.

Marksill Specialties Inc.: *See—*
Sill, Mark N.; and Miller, Delton F., 3,879,055.

Marrian, Stanley Frederic: *See—*
Gasson, Edward James; Korsnar, Thomas Charles; and Marrian, Stanley Frederic, 3,879,435.

Marsan, Arthur E. Membrane stoma seal for ostomy patients. 3,878,847, Cl. 128-283.000.

Marshall, Ian, to Mather & Platt Limited. Heat detection system. 3,878,898, Cl. 169-60.000.

Marshall, Joseph F., to United States of America, Navy. Circuit for anti-jam receiver of wide dynamic range utilizing instantaneous automatic gain control action for closely packed pulses. 3,879,666, Cl. 325-404.000.

Marti, Jakob, to Sulzer Brothers Ltd. Yarn clamp for a textile machine. 3,878,587, Cl. 24-132.000.

Martin, Elmore Louis, to du Pont de Nemours, E. I., and Company. (Substituted dialkylphenyl) alkyl sulfides, sulfoxides and sulfones. 3,879,472, Cl. 260-609.00F.

Martin, Orin K., to Measurex Corporation. Method of measuring the windup weight of a moving stretchable material. 3,879,614, Cl. 250-548.000.

Martin, Robert L.: *See—*
Lawrence, George J.; and Martin, Robert L., 3,879,098.

Martin, Robert M. Hand stand trainer. 3,879,033, Cl. 272-60.00R.

Martin, Robertson & Bain Ltd.: *See—*
Cox, James Patrick; and Cox, Jeanne Marie, 3,879,566.

Martinek, Harold H., to Tee-Pak, Inc. Method for severing tubular film. 3,878,978, Cl. 225-1.000.

Maruyama, Hiroaki: *See—*
Fujii, Yoshikazu; Kato, Yasuyuki; Moritani, Masahiko; and Maruyama, Hiroaki, 3,879,495.

Maruyama, Minoru: *See—*
Toyoda, Sadao; Ogoshi, Toshiaki; and Maruyama, Minoru, 3,879,172.

Marx, Matthias: *See—*
Storck, Gerhard; Diefenbach, Horst; Marx, Matthias; Nagel, Otto; Kuerten, Heribert; and Weinle, Werner, 3,879,335.

Marzetta, Louis A., to United States of America, Health, Education and Welfare. Thermesthesiometer. 3,878,728, Cl. 73-432.0SD.

Masamoto, Junzo: *See—*
Suzuki, Isamu; Ishida, Shinichi; Ohshima, Noboru; Masamoto, Junzo; and Ohtake, Junzo, 3,879,350.

Maschinenfabrik Alfred Schmermund: *See—*
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Mashimo, Yukio: *See—*
Kiyohara, Takehiko; Tsunekawa, Tokuichi; Takishima, Yoshiyuki; Nakamoto, Soichi; Taguchi, Tetsuya; and Mashimo, Yukio, 3,879,118.

Mason, Richard H.; and Mayott, Curtis W., to Norton Company. Sealant hand applicator. 3,879,255, Cl. 156-527.000.

Massachusetts Institute of Technology: *See—*
Gatos, Harry C.; Witt, August F.; and Lichtensteiger, Manfred, 3,879,235.
Luh, Nancy N. R.; and Palmer, James K., 3,879,568.

Masui, Hiroaki: *See—*
Gondo, Hisashi; Takechi, Hiroshi; Abe, Mitsunobu; Namba, Kazuo; Masui, Hiroaki; Uehara, Norimasa; and Komiya, Kunihiko, 3,879,232.

Mathai, John; and Chettiath, Jose J., to Sherwin-Williams Company, The. Polymeric compositions. 3,879,320, Cl. 260-23.0EP.

Mather & Platt Limited: *See—*
Marshall, Ian, 3,878,898.

Mathias, Richard G.: *See—*
Pfaender, Lawrence V.; Mathias, Richard G.; Baker, Theodore C.; Nolan, James F.; and Bode, Wolfgang W., 3,879,634.

Mathieu, Ernst, to Compagnie Electro-Mecanique. Method and apparatus for comparing two objects having similar shapes and dimensions. 3,879,133, Cl. 356-168.000.

Matkovsky, Petr Evgenievich: *See—*
Belov, Gennady Petrovich; Dzhabiev, Taimuraz Savelievich; Dyachkovsky, Fridrikh Stepanovich; Smirnov, Vyacheslav Ivanovich; Karpova, Nelli Dzhavkharovna; Brikenshtein, Khaim-Mordkhe Aronovich; Gerasina, Matrena Petrovna; Kuzmin, Vladimir Evgenievich; Matkovsky, Petr Evgenievich; Russiyan, Ljudmila Nikolaevna; Pomogailo, Anatoly Dmitrievich; and Chirkov, Nikolai Mikhailovich, deceased, 3,879,485.

Matsui, Seiji; Fujinaka, Yasukatsu; and Yabuno, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Magnetic tape head indexing mechanism with single armature spring. 3,879,759, Cl. 360-106.000.

Matsumori, Hiromi; Ohsato, Nobuyoshi; and Hasegawa, Jun, to Nippon Sheet Glass Co., Ltd. Elimination of harmful substances from molten salt used in the ion exchange treatment of glass articles. 3,879,274, Cl. 204-130.000.

Matsumoto, Shun-ichi; and Sato, Eiji, to Toray Industries, Inc. Process for production of yeast cells from butanols. 3,879,261, Cl. 195-49.000.

Matsuo, Susumu. Impact tool. 3,878,902, Cl. 173-14.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Matsui, Seiji; Fujinaka, Yasukatsu; and Yabuno, Yoshiaki, 3,879,759.
Sakamoto, Yoichi, 3,879,747.

Matsushita Electric Works, Ltd.: *See—*
Shoji, Magozo; and Noguchi, Tamiharu, 3,879,572.

Matsuzaki, Tetsuo: *See—*
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Matthaei, Raymond George: *See—*
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Matthews, Charles G.: *See—*
Huellmantel, Louis W.; Matthews, Charles G.; and Nordenson, Gary E., 3,878,678.

Maune, Neil F., to Profile Systems, Inc. Frame concealed operating sash. 3,878,648, Cl. 49-400.000.

Maxcy, Frederic R.; and Hubbard, Richard A., to W-T Industries, Inc. Balcony railing assemblies of extruded metal. 3,879,017, Cl. 256-65.000.

Maxemchuk, Nicholad Frank; and White, Hugh Edward, to RCA Corporation. Data processor for a loop data communications system. 3,879,710, Cl. 340-172.500.

Maxemchuk, Nicholas Frank: *See—*
White, Hugh Edward; and Maxemchuk, Nicholas Frank, 3,879,582.

Maxson Electronics Corporation: *See—*
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May, Douglas C.: *See—*
Barkey, Kenneth T.; and May, Douglas C., 3,879,341.

Mayer, Otto. Joint. 3,879,146, Cl. 403-93.000.

Mayfield, Robert John: *See—*
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Mayott, Curtis W.: *See—*
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Mayr, Hubert: *See—*
Diskus, Alfred; Schonbeck, Rupert; Kloimstein, Engelbert; and Mayr, Hubert, 3,879,391.

Mays, Robert K.: *See—*
Bertorelli, Orlando L.; Mays, Robert K.; Williams, Lloyd E.; and Zimmerman, Howard F., Jr., 3,879,527.

Mazzarella, Richard Benedict: *See—*
Lightstone, John Bernard; Van den Sype, Jaak Stefaan; and Mazzarella, Richard Benedict, 3,878,787.

Mazzolla, Dan D. Steam chest insulation means for commerical roll-type ironing machine. 3,878,627, Cl. 38-56.000.

McAdams, Louis Vincent: *See—*
Panzer, Hans Peter; and McAdams, Louis Vincent, 3,879,258.

McBain Instruments, Inc.: *See—*
Chaban, Richard J., 3,879,107.

McBride, Leo Robert. Adjustable ladder support attachment. 3,878,917, Cl. 182-172.000.

McCabe, Edward J.; and Westphal, Donald E., to Mek-Tronix Laboratories Corporation. Train pulse generator. 3,879,584, Cl. 179-90.00K.

McCarthy, Richard H., to FMC Corporation. Brake structure. 3,878,922, Cl. 188-163.000.

McClain, Philippe Hard-The; and Velte, Carl J., to Shakespeare Company. Thread canister. 3,879,002, Cl. 242-137.100.

McClive, Ralph T., to Clecon, Incorporated. Desiccant device. 3,879,292, Cl. 210-282.000.

McColgin, William C.; and Webster, Frank G., to Eastman Kodak Company. Oxonol dye lasers. 3,879,678, Cl. 331-94.50L.

McCord, Wilfred M., Jr., to Vermont American Corporation. Dovetail fixture. 3,878,875, Cl. 144-87.000.

McCormick, James B., to Pelam, Inc. Microscope slide cover slip. 3,879,106, Cl. 350-95.000.

McCulloch Corporation: *See—*
Ehlen, Jack W.; and Bailey, Jay R., 3,878,607.

McDonald, John C., to Vidar Corporation. Integrating analog to digital converter. 3,879,724, Cl. 340-347.0AD.

McDonnell Douglas Corporation: *See—*
Hug, Norman L., 3,878,606.

McGeorge, Linda Ann: *See—*
Scheelar, Lorne J.; and McGeorge, Linda Ann, 3,878,639.

McGillvary, Daniel Ross, to Firestone Tire & Rubber Company, The. Apparatus for centrifugal casting. 3,879,161, Cl. 425-435.000.

McGrogan, Ellwood Patrick, Jr., to RCA Corporation. Delta modulator utilizing a duty cycle circuit. 3,879,663, Cl. 325-38.00B.

McIntire, Harold K., Jr. Synergistic heat exchange apparatus. 3,878,886, Cl. 165-29.000.

McKendry, Lennon H.: *See—*
Pews, Richard Garth; McKendry, Lennon H.; and Rodia, Ralph M., 3,879,387.

McKissic, George T. Electric Plug-In Module. 3,879,101, Cl. 339-122.00R.

McMullen, James Michael; and Sturkol, Elmer Wilbert, to Industrial Nucleonics Corporation. Workpiece shape - insensitive radiation gauging of rod-like materials. 3,879,608, Cl. 250-359.000.

McPherson, Glenn: *See—*
Bell, Martin; and McPherson, Glenn, 3,878,690.

McVey, Charles I.; and Uy, O. Manuel, to General Electric Company. Zirconia reflector coating on quartz lamp envelope. 3,879,625, Cl. 313-27.000.

McWilliams, Joseph E. Art storing and displaying panels for art display vehicles. 3,878,633, Cl. 40-152.100.

Measurex Corporation: *See—*
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Medical Alginates Limited: *See—*
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Medical Development Corporation: *See—*
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Mediscience Technology Corporation: *See—*
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Medney, Jonas. Porous filament wound pipe and method for making same. 3,879,243, Cl. 156-155.000.

Medovar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Boiko, Georgy Alexandrovich; Egorov, Sergei Petrovich; Kumysh, Ilya Iosifovich; and Popov, Lev Vasilievich, 3,878,882.

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Mehall, Bernard F.: *See—*
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Meier, Henry G.: *See—*
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Meitinger, Heinz, to Bifora-Uhren J. Bidlingmaier GmbH. Automatic watch. 3,878,673, Cl. 58-83.00A.

Mek-Tronix Laboratories Corporation: *See—*
McCabe, Edward J.; and Westphal, Donald E., 3,879,584.

Melacini, Paolo; Kirschner, Helmut; and Campana, Paolo, to Chatillon Societa' Anonima Italiana per ler Fibre tessili Artificiali S.p.A. Process for producing chloro-vinyl fibers having modified light reflection. 3,879,506, Cl. 264-49.000.

Melehan, George M., to Chippewa Paper Products Company. Sheet feeding apparatus. 3,879,031, Cl. 271-11.000.

Melind, Julius J., to H. L. Fisher Mfg. Co., Inc. Can shearing apparatus. 3,878,743, Cl. 82-54.000.

Mennuto, Anthony R. Door assembly including simplified insert supporting means. 3,878,649, Cl. 49-501.000.

Mercade, Venancio V., to Engelhard Minerals & Chemicals Corporation. Purification of quartz contaminated clay by selective flocculation. 3,879,283, Cl. 209-5.000.

Merck & Co., Inc.: *See—*
Lee, Leonard S.; Uyeda, Yoshio; and Sopp, Samuel W., 3,879,234.

Mervyn, Leonard. Chemical process for the production of hydroxocobalticorrinoids. 3,879,378, Cl. 260-211.700.

Messer, Mayer Naoum: *See—*
Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, 3,879,390.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Zech, Hans, 3,878,764.

Messrs. Laboratorio Guidotti & C. S.p.A.: *See—*
Bottari, Francesco; Saettone, Marco Fabrizio; Serafini, Maria Francesca; and Tellini, Natale, 3,879,410.

Metalcut International Incorporated: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
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Metalsky, William J.: *See—*
Kreider, Benjamin A.; Metalsky, William J.; and Cyrway, Edward N., Jr., 3,879,165.

Metlesics, Werner; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. Novel 2[2-(1,3-diazacycloalk-2-enyl)]benzophenone derivatives and novel 1,3-diazacycloalkenyl [2,1-a] isoindole derivatives. 3,879,415, Cl. 260-309.600.

Metschnabl, Andreas: *See—*
Burkhardt, Gottfried; Metschnabl, Andreas; and Greppmaier, Paul, 3,878,781.

Meyer, Herbert Joram, to Texaco Inc. Seismic blaster circuit. 3,878,790, Cl. 102-70.20R.

Meyers, William J., Jr., to Diamond Shamrock Corporation. Control of bacteria and fungi in aqueous systems. 3,879,536, Cl. 424-275.000.

Meyn, John E., to Microdot Inc. Method for making a dual seal insulator for multiple conductor connectors. 3,879,517, Cl. 264-135.000.

Miale, Joseph N.: *See—*
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Michon, Maurice: *See—*
Godard, Bruno; Laxour, Bernard; and Michon, Maurice, 3,879,681.

Microdot Inc.: *See—*
Meyn, John E., 3,879,517.

Milam, David; Schlossberg, Howard; and Szoke, Abraham, to United States of America, Air Force. Laser system for producing variable duration short pulses. 3,879,686, Cl. 331-94.50M.

Milanes, Eddy J., to Honeywell Information Systems, Inc. Digital automatic gain control circuit. 3,879,672, Cl. 330-29.000.

Mileham, James T., to Wurlitzer Company, The. Program holder for a juke box or the like. 3,878,631, Cl. 40-137.000.

Miles Laboratories, Inc.: *See—*
Havera, Herbert John, 3,879,393.

Milkovich, Ralph; Chiang, Mutong T.; and Schulz, Gerald O., to CPC International Inc. Polyblends of chemically joined, phase separated thermoplastic graft copolymers. 3,879,494, Cl. 260-876.00R.

Miller, Charles Eveleigh, to International Telephone and Telegraph Corporation. Densitometer. 3,878,710, Cl. 73-32.00A.

Miller, Clark Ober, to Lubrizol Corporation, The. Lubricants and fuels containing ester-containing compositions. 3,879,308, Cl. 252-56.00R.

Miller, Daniel C. Trailer hitch guide. 3,879,062, Cl. 280-477.000.

Miller, Delton F.: *See—*
Sill, Mark N.; and Miller, Delton F., 3,879,055.

Miller, Donald, to United States of America, Army. Isostatic curing apparatus. 3,879,160, Cl. 425-405.00H.

Mills, Leslie Ernest; and Thomas, Anthony Ernest, to British Steel Corporation. Rolling mills. 3,878,703, Cl. 72-238.000.

Miners, Frederick Barry: *See*—
Morris, Larry Roy; Miners, Frederick Barry; and Lowe, James Brian, 3,879,194.

Minnesota Mining and Manufacturing Company: *See*—
Filreis, Manuel; and Driscoll, Aelred D., 3,879,249.
Lunde, George G., 3,879,737.

Minolta Camera Kabushiki Kaisha: *See*—
Saito, Mitsuru, 3,879,655.

Minor, Walter A., Jr., to Carrier Corporation. Process for manufacturing humidifier filter media. 3,878,594, Cl. 29-163.50F.

Minshull, Robert: *See*—
Cairns, Hugh; and Minshull, Robert, 3,879,411.

Mitchell, Maurice M., Jr., to Atlantic Richfield Company. Conversion of non-cyclic C_2-C_3 alkanes and alkenes to aromatic hydrocarbons. 3,879,486, Cl. 260-673.000.

Mitsubishi Chemical Industries Limited: *See*—
Munakata, Hiroaki; and Imaki, Naoshi, 3,879,470.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Akamatsu, Masahiko, 3,879,620.

Mitsui Petrochemical Ind., Ltd.: *See*—
Fujita, Yasuhiro; Nagaoka, Takenori; and Simokawa, Yuji, 3,879,444.

Miyake, Shiuichi, to Nihon Radiator Co., Ltd. Window regulator driving means for an automobile. 3,879,623, Cl. 310-83.000.

Miyata, Shigeo; Kumura, Teruhiko; and Shimada, Minoru, to Kyowa Chemical Industry Co., Ltd. Composite metal hydroxides. 3,879,523, Cl. 423-250.000.

Miyata, Shigeo; Kumura, Teruhiko; and Shimada, Minoru, to Kyowa Chemical Industry Co., Ltd. Composite metal hydroxides. 3,879,525, Cl. 423-277.000.

Mizen, Lawrence R.: *See*—
Baker, Jack M.; Dimitroff, Vladimir T.; Mizen, Lawrence R.; and Gray, Russell A., 3,879,616.

Mizikar, Eugene A.: *See*—
De Luca, Norman C.; and Mizikar, Eugene A., 3,879,167.

MI², Incorporated: *See*—
Fretwell, Richard D., 3,879,579.

Mladek, Milos: *See*—
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Mobil Oil Corporation: *See*—
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Braid, Milton, 3,879,307.
Cavanna, Anthony John; and Colombo, Edward Armando, 3,879,507.
Ehrlich, Melville, 3,879,305.
Yurchak, Sergei; and Miale, Joseph N., 3,879,489.

Moceri, Francesco. Foldable sunshade attachment for a chair. 3,879,086, Cl. 297-184.000.

Mock, Presley J., Jr. Combination boat hook and mooring apparatus. 3,878,808, Cl. 114-230.000.

Mojden, Wallace W.; Davila, Jose E.; Hooper, George W.; Kwiatkowski, Gerald M.; and Pantel, Howard W., Jr., to Fleetwood Systems, Inc. Method and apparatus for counting and packaging can ends. 3,878,945, Cl. 214-7.000.

Mole, Philip J., to General Dynamics Corporation. Wind tunnel balance for supplying compressed fluid to the model. 3,878,713, Cl. 73-147.000.

Monarch Marking System Company, The: *See*—
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Monarch Tool and Manufacturing Company: *See*—
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Monrick Holding Limited: *See*—
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Monsanto Chemicals Limited: *See*—
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Monsanto Company: *See*—
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Kowalski, Xavier, 3,879,270.
Smith, Lowell R., 3,879,479.

Monsen, Peter, to Signatron, Inc. High speed digital communication receiver. 3,879,664, Cl. 325-303.000.

Montedison Fibre S.p.A.: *See*—
Patron, Luigi; Moretti, Alberto; Tedesco, Raffaele; and Pasqualetto, Renato, 3,879,360.

Moore, Alvin Edward. Light-weight, construction unit. 3,878,661, Cl. 52-443.000.

Morel, Andre, to Sodifac S.A. Hairdresser's chair. 3,879,085, Cl. 297-182.000.

Morell, Juan Coll. Wedge for gripping a multi-ply cable. 3,879,147, Cl. 403-369.000.

Moreno, Frank J.: *See*—
Schlosser, Leslie H.; and Moreno, Frank J., 3,879,580.

Moretti, Alberto: *See*—
Patron, Luigi; Moretti, Alberto; Tedesco, Raffaele; and Pasqualetto, Renato, 3,879,360.

Morgan Adhesives Company: *See*—
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Morgan, Burton D., to Morgan Adhesives Company. Surgical drape with edge grips and method. 3,878,843, Cl. 128-132.00D.

Morgan, David W.: *See*—
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Morgan, Irene Mary: *See*—
Lipson, Menzie; Mayfield, Robert John; and Morgan, Irene Mary, 3,878,853.

Mori, Chiharu; and Kamasako, Shoji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light-measuring systems. 3,879,740, Cl. 354-24.000.

Morick, Ulrich, to Basf Farben & Fasern Aktiengesellschaft. Tinting device. 3,878,907, Cl. 177-70.000.

Morimoto, Hiroshi; Watanabe, Masazumi; and Imada, Isuke, to Takeda Chemical Industries, Ltd. 4-Hexenoic compounds. 3,879,448, Cl. 260-484.00R.

Morita, Yoshishige. Method of manufacturing porous articles of synthetic resins. 3,879,515, Cl. 264-123.000.

Moritani, Masahiko: *See*—
Fujii, Yoshikazu; Kato, Yasuyuki; Moritani, Masahiko; and Maruyama, Hiroaki, 3,879,495.

Moritz, Mats Inge: *See*—
Hakansson, Sven Anders Samuel; and Moritz, Mats Inge, 3,878,681.

Moriyasu, Hiro, to Tektronix, Inc. Adjustable trigger level control circuit. 3,879,669, Cl. 328-146.000.

Morris, Howard W., to Carrier Corporation. Hinge assembly. 3,878,585, Cl. 16-128.000.

Morris, Larry Roy; Miners, Frederick Barry; and Lowe, James Brian, to Alcan Research and Development Limited. Aluminum alloys. 3,879,194, Cl. 75-147.000.

Morrison, Thomas, to Econopal Inc. Plastic pallet assembly. 3,878,796, Cl. 108-56.000.

Morrow, James G., Sr.: *See*—
Beduhn, Dantel E.; and Morrow, James G., Sr., 3,878,944.

Moser, Herbert, to Gesellschaft fur Kernforschung m.b.H. Method and apparatus for the rapid measuring of the angular dependence of scattered light. 3,879,615, Cl. 250-574.000.

Mosher, Ralph S., to Robotics, Incorporated. Low cost programmable remote control machine tool manipulator having continuous path control. 3,878,652, Cl. 51-165.890.

Moskowitz, David: *See*—
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Motorola, Inc.: *See*—
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Mott, James D., to Hydril Company. Well Tool. 3,879,012, Cl. 251-58.000.

Mount Hope Machinery Company: *See*—
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Mourier, Georges, to Thomson-CSF. Compton effect lasers. 3,879,679, Cl. 331-94.50N.

Mudde, John P., to CPC International Inc. Vapor permeable compositions. 3,879,493, Cl. 260-859.00R.

Mueller, James P.: *See*—
Barton, James C.; Christensen, Jon C.; Mueller, James P.; and Sprinkle, Larry W., 3,879,007.

Muerrle, Kurt, to Pforzheimer Uhren-Rohwerke Rudolf Wehmer. Stepping mechanism for digital timepiece. 3,878,674, Cl. 58-125.00B.

Muhlhausser, Martin; and Roth, Christian, to Aluminium-Walzwerke Singen GmbH. Process for the manufacture of aluminium electrodes for electrolytic capacitors. 3,879,273, Cl. 204-129.750.

Mullender, Claude; and Reinhart, Norman E., to B. F. Goodrich Company, The. Belt covering apparatus. 3,879,242, Cl. 156-137.000.

Muller, Clara L.; and Muller, William F. Surgical tube supporter. 3,878,849, Cl. 128-349.00R.

Muller, Hellmut; and Muller, Herbert. Vacuum cutting meat processing machine. 3,879,000, Cl. 241-282.100.

Muller, Helmut: *See*—
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Muller, Herbert: *See*—
Muller, Hellmut; and Muller, Herbert, 3,879,000.

Muller, Jacques. Electronic water detector. 3,879,656, Cl. 324-30.00R.

Muller, Reinhard: *See*—
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Muller, Richard: *See*—
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Muller, William F.: *See*—
Muller, Clara L.; and Muller, William F., 3,878,849.

Muller, Wolfgang; and Brugger, Wilhelm, to Goldschmidt AG, The. Smokeless fluxing material for hot tin-coating, hot-leading, and hot-galvanizing. 3,879,233, Cl. 148-26.000.

Mullritter, Ludwig: *See*—
Eppe, Rudolf; Fryda, Georg; Mullritter, Ludwig; Schnall, Gunther; Schrecke, Hans-Joachim; Pfeifer, Josef; and Abbe, Gunther, 3,879,124.

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Munakata, Hiroaki; and Imaki, Naoshi, to Mitsubishi Chemical Industries Limited. Benzophenone derivatives and a process for the production. 3,879,470, Cl. 260-591.000.

Munro, David Farnham: *See*—
Cuthbert, John David; Fehrs, Delmer Lee; and Munro, David Farnham, 3,879,131.

Murakami, Mashiro. Roller device. 3,878,927, Cl. 193-37.000.

Mussinan, Cynthia J.: *See—*
Pittet, Alan O.; Hruza, Denis E.; Katz, Ira; Mussinan, Cynthia J.; and Pascale, John V., 3,879,562.

Mutt, Viktor: *See—*
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Myeress, Rudolph S., to Allied Steel and Tractor Products, Incorporated. Alignment apparatus for a light beam generator. 3,879,132, Cl. 356-153.000.

N-Dimensions, Inc.: *See—*
Walker, Alexander D. R., 3,879,602.

N L Industries, Inc.: *See—*
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N.V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal": *See—*
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Nadas, Gyula, to Knorr-Bremse GmbH. Automatic resetting device for brakes. 3,878,924, Cl. 188-203.000.

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Nadelson, Jeffrey: *See—*
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Nagaoka, Takenori: *See—*
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Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, to Canon Kabushiki Kaisha. Electrophotographic method for colored images. 3,879,196, Cl. 96-1.200.

Nagel, Otto: *See—*
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Naismith, Robert; and Scheffee, Robert Stephen, to Atlantic Research Corporation. Device for removing and decontaminating chemical laser gaseous effluent. 3,879,680, Cl. 331-94.50G.

Nakada, Shuichi; Ota, Hiroshi; and Matsuzaki, Tetsuo, to Toyoda-Koki Kabushiki Kaisha. Machine tool with rest apparatus. 3,878,651, Cl. 51-105.0SP.

Nakamoto, Soichi: *See—*
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Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, to Tokyo Shibaura Electric Co., Ltd. Semiconductor device diffusion source containing as impurities AS and P or B. 3,879,230, Cl. 148-1.500.

Nakamura, Sigeru; Taguchi, Mitsuru; Naniwada, Satoru; and Ohguri, Naoki, to Show Denk Kabushiki Kaisha; and Japan Analytical Industry Co. Gas chromatograph, specimen capsule for use therein and process for gas chromatography. 3,879,181, Cl. 55-197.000.

Nakamura, Tadayoshi: *See—*
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Nakamura, Yasushi: *See—*
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Nakanishi, Michio; Arimura, Katsuo; and Tsumagari, Tatsumi, to Yoshitomi Pharmaceutical Industries, Ltd. Pyrido(4,3-c)pyridazine compounds. 3,879,392, Cl. 260-250.0AC.

Namba, Kazuo: *See—*
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Nash, Harold Garth: *See—*
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Nash, James C., to Langhorn Construction Company, Inc. Refuse shredder and classifier. 3,878,995, Cl. 241-79.100.

Nashan, Gerd; Volmari, Josef; Peter, Helmut; and Batora, Gunter. Shed for the discharge side of a coke oven battery. 3,879,267, Cl. 202-263.000.

Nath, Gunther, to J. M. Voith GmbH. Arrangement for measuring the temperature of a moving object. 3,878,721, Cl. 73-351.000.

National Distillers and Chemical Corporation: *See—*
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National Research Development Corporation: *See—*
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Nelson, William L.; and Fine, Chauncey M. Spot removing substance. 3,879,213, Cl. 106-286.000.

Nestler, Heinz; Amort, Jurgen; and Plankl, Leo Hans, to Dynamit Nobel AG. Composition for impregnation of masonry having a neutral or acidic reaction surface. 3,879,206, Cl. 106-12.000.

Neuber, Jurgen: *See—*
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Nevin, Robert Leland, to General Electric Company. Moving target indicator with minimum clutter interference. 3,879,729, Cl. 343-7.00A.

Newgarden, Joseph E., Jr. Table tennis ball serving apparatus. 3,878,827, Cl. 124-1.000.

Ney, Robert; and Rhiem, Hans-Christoph, to Lynenwerk KG. Electric cables. 3,879,518, Cl. 264-174.000.

Nezworski, James E., to Perlick Company, Inc., The. Beer dispensing instrumentalities and method. 3,878,970, Cl. 222-61.000.

Nicholas, William. Solid waste container. 3,879,079, Cl. 294-118.000.

Nicholl, Edward McKillop: *See—*
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Nichols, William J. Hydraulically propelled high clearance agricultural vehicle. 3,878,911, Cl. 180-51.000.

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Niederer, Otto C., deceased; by Niederer, Thomas C.; and by Niederer, Dennis A., executors. Carton closing equipment. 3,878,668, Cl. 53-376.000.

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Nolan, Chris, to Abbott Laboratories. Anti-coagulant isolation from malayan pit viper using affinity chromatography. 3,879,369, Cl. 260-112.00R.

Nolan, James F.: *See—*
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Nordin, Ivan C., to Parke, Davis & Company. 3-(1-Piperazinylalkylamino)-2-cycloalken-1-one compounds and methods for their production. 3,879,395, Cl. 260-268.0PH.

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Norlander, Ake W. Support structure for use in casting reinforced concrete ceilings and the like. 3,879,010, Cl. 249-210.000.
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Oehlerking, Conrad, to Volkswagenwerk Aktiengesellschaft. Vehicle bumper arrangement. 3,879,074, Cl. 293-68.000.
Oertle, Don H., to Continental Oil Company. Electrical connectors for telemetering drill strings. 3,879,097, Cl. 339-16.00R.
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Olsen, Orrie C.: *See—*
Rigge, Ronald J.; Olsen, Orrie C.; and Goetschel, Charles T., 3,879,310.
Olsson, Gote. Combination furniture comprising a rocking-chair, a children's chair and a car for playing purposes. 3,879,083, Cl. 297-1.000.
Olstowski, Franciszek; and Parrish, Donald B., to Dow Chemical Company, The. Non-elastomeric polyurethane compositions containing cyclic polyethers. 3,879,329, Cl. 260-30.40N.
Olympia Werke AG: *See—*
Bettin, Hubertus; and Folta, Alfred, 3,879,713.
Olympic Metronics, Inc.: *See—*
Sotiropoulos, Hippocrates; and Tsaprazis, Euripedes, 3,878,984.
Olympus Optical Co., Ltd.: *See—*
Goto, Atsuo, 3,879,111.
Utsugi, Mikio, 3,878,835.
OMF California, Inc.: *See—*
Protta, Jean-Claude; and Savary, Antoine, 3,878,714.
Omietanski, George M.; and Chuang, Vincent T., to Union Carbide Corporation. Hydroxyalkylsiloxane rigid urethane foam stabilizers. 3,879,433, Cl. 260-448.20B.
O'Neill, Michael P.: *See—*
Glover, Clyde P.; and O'Neill, Michael P., 3,879,295.
Ono, Isao; Sakamoto, Teruhisa; and Hironaka, Toshio, to Toyo Soda Manufacturing Co., Ltd. Process for producing methacrolein and methacrylic acid. 3,879,453, Cl. 260-533.00N.
Oostenbrink, Albertus Anthony, to Wavin B.V. Pipe connection. 3,879,069, Cl. 285-162.000.
Opsonar Organ Corporation: *See—*
Golden, Michael E.; Pearlman, Marshall B.; and Ryan, John W., 3,878,751.
O'Rear, Jacques G.; and Griffith, James R., to United States of America, Navy. Highly fluorinated diglycidyl ethers. 3,879,430, Cl. 260-348.00R.
Orlens, Alfreds; and Coville, William W., to Pitney-Bowes, Inc. Type disc with integral coupling device. 3,878,929, Cl. 197-53.000.
Osterreichische Stickstoffwerke Aktiengesellschaft: *See—*
Diskus, Alfred; Schonbeck, Rupert; Kloimstein, Engelbert; and Mayr, Hubert, 3,879,391.
Ostler, David S.: *See—*
Holbrook, Legrand K.; and Ostler, David S., 3,878,962.
Ota, Hiroshi: *See—*
Nakada, Shuichi; Ota, Hiroshi; and Matsuzaki, Tetsuo, 3,878,651.
Otis Engineering Corporation: *See—*
Blanton, James R., 3,878,862.
Snyder, David E., 3,878,863.
Oury, Robert F., to Rotec Industries. Tower-mounted concrete conveyor. 3,878,935, Cl. 198-88.000.
Outboard Marine Corporation: *See—*
Rose, Edgar, 3,879,092.
Owen, Tom E., to Hudson Products Corporation. Method of manufacturing a bimetal finned tube. 3,878,593, Cl. 29-157.30A.
Owens-Corning Fiberglas Corporation: *See—*
Roberson, Cletis L.; Russell, Robert G.; Stream, Ralph M.; and Leaman, Harold E., 3,878,813.
Owens-Illinois, Inc.: *See—*
Crawford, James E., 3,879,353.
Pfaender, Lawrence V.; Mathias, Richard G.; Baker, Theodore C.; Nolan, James F.; and Bode, Wolfgang W., 3,879,634.
Ozutsumi, Minoru: *See—*
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,879,336.
P. R. Mallory & Co. Inc.: *See—*
Sweany, Louis P., 3,879,726.
Pachter, Irwin J.; and Gordon, Maxwell, to Bristol-Myers Company. Method of treating drug addicts. 3,879,555, Cl. 424-260.000.
Pacifici, James G., to Eastman Kodak Company. Light-sensitive polymeric compositions. 3,879,356, Cl. 260-79.5NV.
Palmer, James K.: *See—*
Luh, Nancy N. R.; and Palmer, James K., 3,879,568.
Palmer, Oliver Ellsworth: *See—*
Sodder, George, Jr.; Fish, Samuel Eugene; and Palmer, Oliver Ellsworth, 3,879,088.
Palo Alto Medical Research Foundation: *See—*
Tickner, E. Glenn; and Boyers, David G., 3,878,832.
Pantel, Howard W., Jr.: *See—*
Mojden, Wallace W.; Davila, Jose E.; Hooper, George W.; Kwiatkowski, Gerald M.; and Pantel, Howard W., Jr., 3,878,945.
Panzer, Hans Peter; and McAdams, Louis Vincent, to American Cyanamid Company. Paper containing a thermosetting cyclo-1,1-diallylguanidine polymer as wet strengthening agent. 3,879,258, Cl. 162-166.000.
Paradise, William Frederick: *See—*
Ellerton, Norman Vaughan; Paradise, William Frederick; and Sandord, Peter Edgar, 3,879,398.
Pareja, Ramon, to Lear Siegler, Inc. Unitized valve assembly. 3,878,861, Cl. 137-543.170.
Parke, Davis & Company: *See—*
Nordin, Ivan C., 3,879,395.
Stoliker, Harry E., 3,879,535.
Parker, David J., to du Pont de Nemours, E. I., and Company. Polybutadiene coating compositions. 3,879,331, Cl. 260-33.60A.
Parrish, Donald B.: *See—*
Olstowski, Franciszek; and Parrish, Donald B., 3,879,329.
Pascale, John V.: *See—*
Pittet, Alan O.; Hruza, Denis E.; Katz, Ira; Mussinan, Cynthia J.; and Pascale, John V., 3,879,562.

Pasqualetto, Renato: *See—*
Patron, Luigi; Moretti, Alberto; Tedesco, Raffaele; and Pasqualetto, Renato, 3,879,360.

Patel, Ramesh S., to Honeywell Information Systems, Inc. Prerecorded digital data compensation system. 3,879,342, Cl. 360-45.000.

Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Boiko, Georgy Alexandrovich; Egorov, Sergei Petrovich; Kumysh, Ilya Iosifovich; and Popov, Lev Vasilievich. Method for producing shaped ingots by electroslag remelting. 3,878,882, Cl. 164-52.000.

Patron, Luigi; Moretti, Alberto; Tedesco, Raffaele; and Pasqualetto, Renato, to Montedison Fibre S.p.A. Process for the bulk-polymerization of acrylonitrile. 3,879,360, Cl. 260-85.50R.

Patterson, Marilyn. Pattern table. 3,878,797, Cl. 108-90.000.

Paxton, Thomas R., to B. F. Goodrich Company, The. Low rubber, high-flow and high impact ABS plastics, improved rubber toughener for producing same, and method of manufacture. 3,879,496, Cl. 260-880.00R.

Payne, Richard: *See—*
Theodorou, Ignatius E.; and Payne, Richard, 3,879,228.

Pearce, Roscoe L.; and Wisniewski, David F., to Dow Chemical Company, The. Method for absorbing and releasing energy. 3,879,023, Cl. 267-64.00R.

Pearlman, Marshall B.: *See—*
Golden, Michael E.; Pearlman, Marshall B.; and Ryan, John W., 3,878,751.

Pearson, James M.: *See—*
Saeva, Franklin D.; Levy, Mosher; Strella, Stephen; Pearson, James M.; and Williams, David J., 3,879,198.

Peirish, Alfred J., Jr.; and Uyeda, Tim M., to International Telephone and Telegraph Corporation. Sewage treatment device. 3,878,569, Cl. 4-77.000.

Pelam, Inc.: *See—*
McCormick, James B., 3,879,106.

Pelky, Phillip J.: *See—*
Greenman, James R.; and Pelky, Phillip J., 3,878,643.

Pelousek, Herbert: *See—*
Rosendahl, Friedrich-Karl; Pelousek, Herbert; and Niederprum, Hans, 3,879,351.

Peltola, Ronald W.; and Guarnero, Richard F., to Tektronix, Inc. Coaxial cable connector for circuit board. 3,879,103, Cl. 339-177.00R.

Penney, Donald A. Ski pole handle. 3,879,048, Cl. 280-11.37H.

Pepper, Perry Arnold, to Edo Corporation. Unipolar acoustic pulse generator apparatus. 3,879,698, Cl. 340-5.00R.

Pepper, Perry Arnold, to Edo Corporation. Unipolar acoustic pulse generator apparatus. 3,879,699, Cl. 340-5.00R.

Perlick Company, Inc., The: *See—*
Nezworski, James E., 3,878,970.

Perna, Anthony. Finishing tools for wallboard surfaces. 3,878,581, Cl. 15-235.700.

Perret, Jean-Pierre; and Vidon, Bruno, to Societe Anonyme Pechiney Ugine Kuhlmann. Method for the combustion of sulphur. 3,879,530, Cl. 423-543.000.

Persson, Nils Olof; Suvanto, Antti; Tornblom, Lars; and Haga, Ingvald, to Aktiebolaget ASEA-ATOM, by said Persson, Survanto and Tornblom. Core module for nuclear reactors. 3,879,259, Cl. 176-36.00R.

Pesson, Marcel, to Societe Anonyme dite: Laboratoire Roger Bellon. New 2,3-dihydro-1,4-benzoxazines in compositions effecting the central nervous system. 3,879,522, Cl. 424-248.000.

Petalidis, Claude A.: *See—*
Thompson, Tom H., 3,878,707.

Peter, Helmut: *See—*
Nashan, Gerd; Volmari, Josef; Peter, Helmut; and Batora, Gunter, 3,879,267.

Peters, Gerret M., Jr.; Stuber, Fred A.; and Ulrich, Henri, to Upjohn Company, The. Substituted butadiene and hexatriene photosensitizers. 3,879,463, Cl. 260-571.000.

Peters, Kenneth, to Electric Power Storage Limited. Electric storage battery grids. 3,879,217, Cl. 135-26.000.

Petersdorf, Gerhard: *See—*
Knechtel, Welhelm; Petersdorf, Gerhard; and Sandner, Winfried, 3,878,622.

Petersen, Siegfried: *See—*
Kabbe, Hans-Joachim; Horstmann, Harald; Plumpe, Hans; Puls, Walter; and Petersen, Siegfried, 3,879,541.

Peterson, Francis N., to Hafner, Frederick F., a part interest. Device for determining dimensional reductions and enlargements. 3,878,615, Cl. 33-95.000.

Peterson, John I.; Chrambach, Andreas; Holland, Julian W., Jr.; Dehn, William R.; and Swank, H. Douglas, to United States of America, Health, Education and Welfare. Gel slab electrophoresis cell and electrophoresis apparatus utilizing same. 3,879,280, Cl. 204-299.000.

Peterson, John I., to United States of America, Health, Education and Welfare. Scintillation analysis system. 3,879,503, Cl. 261-153.000.

Petroleum Reclaiming Corporation: *See—*
Seelbach, William R., 3,879,264.

Petrusek, Victor. Footprint alignment game. 3,879,034, Cl. 273-1.00R.

Pettibone Corporation: *See—*
Lund, Robert S.; and Koss, Vernon J., 3,878,881.

Pews, Richard Garth; McKendry, Lennon H.; and Rodia, Ralph M., to Dow Chemical Company, The. Process for the preparation of pyridyl isocyanurates. 3,879,387, Cl. 260-248.0NS.

Pfaender, Lawrence V.; Mathias, Richard G.; Baker, Theodore C.; Nolan, James F.; and Bode, Wolfgang W., to Owens-Illinois, Inc. Manufacture and operation of gas discharge panel. 3,879,634, Cl. 315-169.0TV.

Pfeifer, Hermann. Fitting for pre-cast concrete bodies. 3,878,659, Cl. 52-699.000.

Pfeifer, Josef: *See—*
Eppe, Rudolf; Fryda, Georg; Mullritter, Ludwig; Schnall, Gunther; Schrecke, Hans-Joachim; Pfeifer, Josef; and Abbe, Gunther, 3,879,124.

Pfiffner, Albert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,879,429.

Pfister, Gustav: *See—*
Williams, David J.; Lardon, Marcel A.; Abkowitz, Martin A.; and Pfister, Gustav, 3,879,201.

Pfizer Inc.: *See—*
Hamsher, James J., 3,879,409.
Holland, Gerald F., 3,879,402.
Kuhla, Donald E.; and Sarges, Reinhard, 3,879,403.

Pfleiderer, Wolfgang: *See—*
Zondler, Helmut; and Pfleiderer, Wolfgang, 3,879,399.

Pforzheimer Uhren-Rohwerke Rudolf Wehmer: *See—*
Muerrle, Kurt, 3,878,674.

Philco-Ford Corporation: *See—*
Wright, Charles R., 3,879,166.

Philip Morris Incorporated: *See—*
Braginetz, Paul A., 3,878,605.

Phillips Petroleum Company: *See—*
Blackwell, Jennings P., 3,879,355.
Gray, Roy A.; and Brady, Donnie G., 3,879,445.
Johnson, Marvin M., 3,879,282.
Seabourn, Ed O., 3,878,889.
Selman, Charles M., 3,879,366.
Stapp, Paul R., 3,879,473.

Phone-Aid Co., Inc.: *See—*
Hubbard, Linus O., 3,879,643.

Pilato, Louis A.: *See—*
Cressman, Paul J.; Limburg, William W.; and Pilato, Louis A., 3,879,275.

Pillsbury Company, The: *See—*
Ryan, Jack A.; Easter, Ross A.; and Rejsa, Jack J., 3,878,943.
Tucker, Don R.; and Willits, Richard E., 3,879,563.

Pinecrest Engineering, Inc.: *See—*
Greenman, James R.; and Pelky, Phillip J., 3,878,643.

Piso, John S. Capacitive measuring system. 3,879,660, Cl. 324-61.00R.

Pitner, Alfred, to Nadella, a part interest. Assembly of a yoke of a universal joint with a shaft. 3,878,695, Cl. 64-11.00R.

Pitney-Bowes, Inc.: *See—*
Orlens, Alfreds; and Coville, William W., 3,878,929.

Pittet, Alan O.; Hruza, Denis E.; Katz, Ira; Mussinan, Cynthia J.; and Pascale, John V., to International Flavors & Fragrances Inc. Flavoring foodstuffs with a thioester. 3,879,562, Cl. 426-535.000.

Plankl, Leo Hans: *See—*
Nestler, Heinz; Amort, Jurgen; and Plankl, Leo Hans, 3,879,206.

Plant, Frank M.: *See—*
Einstman, William J.; Rehman, Warren C.; and Plant, Frank M., 3,879,565.

Plempel, Manfred: *See—*
Timmler, Helmut; Buchel, Karl-Heinz; and Plempel, Manfred, 3,879,558.

Pleshko, Peter, to International Business Machines Corporation. Mosbip switching circuit. 3,879,619, Cl. 307-251.000.

Plessey Handel und Investments A.G.: *See—*
Edge, Gordon; and Worthington, George, 3,879,712.
Jones, Frederick Raymond, 3,879,624.

Plimley, Raymond Ernest: *See—*
Backhurst, John Rayner; Goodridge, Francis; Plimley, Raymond Ernest; and Fleischmann, Martin, 3,879,225.

Plumpe, Hans: *See—*
Kabbe, Hans-Joachim; Horstmann, Harald; Plumpe, Hans; Puls, Walter; and Petersen, Siegfried, 3,879,541.

Polaroid Corporation: *See—*
Fitzgerald, Maurice J.; and Taylor, Lloyd D., 3,879,205.
Land, Edwin H., 3,879,116.

Poley, Neil M.: *See—*
Halperin, Bernard I.; Manley, Gerald W.; and Poley, Neil M., 3,879,630.

Pollitzer, Ernest L., to Universal Oil Products Company. Hydrocarbon isomerization process. 3,879,484, Cl. 260-668.00A.

Polysius AG: *See—*
Luttmann, Josef; and Schnuckel, Clemens, 3,878,719.

Pomogailo, Anatoly Dmitrievich: *See—*
Belov, Gennady Petrovich; Dzhabiev, Taimuraz Savelievich; Dyachkovsky, Fridrikh Stepanovich; Smirnov, Vyacheslav Ivanovich; Karpova, Nelli Dzhavkharovna; Brikenshtein, Khaim-Mordkhe Aronovich; Gerasina, Matrena Petrovna; Kuzmin, Vladimir Evgenievich; Matkovsky, Petr Evgenievich; Russiyan, Ljudmila Nikolaevna; Pomogailo, Anatoly Dmitrievich; and Chirkov, Nikolai Mikhailovich, deceased, 3,879,485.

Pont-A-Mousson S.A.: *See—*
Gorius, Daniel Louis Marie, 3,878,815.

Popov, Lev Vasilievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Dubinsky, Rudolf Solomonovich; Boiko, Georgy Alexandrovich; Egorov, Sergei Petrovich; Kumysh, Ilya Iosifovich; and Popov, Lev Vasilievich, 3,878,882.

Popplewell, James M.: *See—*
Anthony, William H.; and Popplewell, James M., 3,878,871.

Por, L. Laslo. Liquid measuring and dispensing apparatus. 3,878,972, Cl. 222-207.000.

Porret, Daniel: *See—*
Batzer, Hans; Habermeier, Juergen; and Porret, Daniel, 3,879,422.

Porter, Robert C. Pet door device. 3,878,645, Cl. 49-169.000.

Porter, Robert R. Continuous ion exchange process and apparatus. 3,879,287, Cl. 210-33.000.

Portz, William E.; and Kanne, John T., to True Temper Corporation. Handgrip for game racket. 3,879,036, Cl. 273-73.00J.

Pounder, Maurice George: *See—*
Kersham, Bernard John; and Pounder, Maurice George, 3,879,436.

Powell, B. J.: *See—*
Fisher, William G., 3,879,123.

Powell, Raymond H.: *See—*
Stults, Allan C.; Powell, Raymond H.; and O'Brian, Edward D., 3,879,089.

PPG Industries, Inc.: *See—*
Deli, Joseph; and Lavanish, Jerome M., 3,879,476.
Lavanish, Jerome M., 3,879,191.

Prada, Luis E., to General Electric Company. Electrical system for a refrigerator ice service. 3,878,693, Cl. 62-131.000.

Presby, Herman Melvin, to Bell Telephone Laboratories, Incorporated. Method and apparatus for measuring the refractive index and diameter of optical fibers. 3,879,128, Cl. 356-73.000.

Preuss, Friedrich, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Conveying chain pair for gripper carriages on sheet-fed machines, particularly offset printing presses. 3,878,735, Cl. 74-250.00C.

Price Brothers Company: *See—*
Keyser, Lewis R., 3,879,067.

Price, David D., Jr.: *See—*
De Bell, Lawrence R.; and Price, David D., Jr., 3,879,756.

Pritchard, Arnold J. Anchor for wheel supported crop irrigation conduit. 3,878,860, Cl. 137-344.000.

Prochazka, Arthur; and Wolf, Siegfried, to Bayern-Chemie Gesellschaft fur Flugchemische Antriebe mit beschrankter Haftung. Receptacle means for solid propellant useful to inflate automobile safety devices. 3,878,969, Cl. 222-3.000.

Prociuk, Anatol. Spaced chess clocks. 3,878,675, Cl. 58-145.00D.

Proctor, Sidney Ernest, to Austin Hoy and Company Limited. Bottom unloaders. 3,878,934, Cl. 198-57.000.

Products Chimiques Pechiney-Saint-Gobain: *See—*
Kemp, Thomas; and Badguerahanian, Leon, 3,879,364.

Products International Marketing: *See—*
Twentier, Max E., 3,878,836.

Produits Chimiques Ugine Kuhlmann: *See—*
Domergue, Annick Marthe Suzanne Simone; and Sureau, Robert Frederic Michel, 3,879,417.

Profile Systems, Inc.: *See—*
Maune, Neil F., 3,878,648.

Progler, Max, to Licentia Patent-Verwaltungs-GmbH. Data transmission system. 3,879,577, Cl. 178-23.00A.

Protta, Jean-Claude; and Savary, Antoine, to OMF California, Inc. Apparatus for determining the velocity and the direction of relative motion thereof with respect to a fluid and with regard to a direction of reference, and the use of said apparatus. 3,878,714, Cl. 73-189.000.

Proulx, Romeo T., to Barry Wright Corporation. Filing system. 3,878,630, Cl. 40-78.000.

Providence Hospital: *See—*
Sauvage, Lester R., 3,878,565.

Puklus, William V., Jr. Automatic locking sliding nut. 3,878,757, Cl. 85-32.00V.

Pulju, Hugo E. Protective face mask. 3,878,563, Cl. 2-9.000.

Pullman Transport Leasing Company: *See—*
Adler, Franklin P., 3,878,794.

Puls, Walter: *See—*
Frommer, Werner; Puls, Walter; and Schmidt, Delf, 3,879,546.
Kabbe, Hans-Joachim; Horstmann, Harald; Plumpe, Hans; Puls, Walter; and Petersen, Siegfried, 3,879,541.

Purdy, David L., to Atlantic Richfield Company. Self-contained artificial heart. 3,878,567, Cl. 3-1.700.

Purland, Donald A.; and Gustafson, Alan M., to Digi-Gard, Inc. Electronic motor vehicle speed control apparatus. 3,878,915, Cl. 180-105.00E.

Purvis, John Colin, to Litton Systems, Inc. Bilge block reeving system. 3,878,688, Cl. 61-66.000.

Pyles, Gerald Dee, to RCA Corporation. Tape cartridge changer with selective cartridge and track programming controls. 3,879,758, Cl. 360-92.000.

Q-V-S. Inc.: *See—*
Fogle, Marlin E., 3,878,964.

Quaker Oats Company, The: *See—*
Tomomatsu, Hideo, 3,879,529.

Qualey, John: *See—*
Handziak, Louis J.; Qualey, John; Lynch, Patrick M.; and Wollenschlager, Donald C., 3,878,745.

Quant, Donald J.: *See—*
Thettu, Raghulinga R.; and Quant, Donald J., 3,878,818.

Quimpo, Jacob R. Floating fishing device. 3,878,634, Cl. 43-15.000.

Quinn, Lawrence R.; and Bielenberg, Max J., to Roura Iron Works, Inc. Rocker and platform assembly for self-dumping hoppers and the like. 3,878,950, Cl. 214-130.00R.

R. Alkan & Cie: *See—*
Guimier, Jacques A.; and Coutin, Pierre F., 3,879,642.

R. E. Ingham & Co., Limited: *See—*
Ingham, Robert Edward, 3,879,251.

R. L. Crain Limited: *See—*
Frank, John F., 3,879,028.

Radiometer A/S: *See—*
Malmvig, Henrik, 3,879,604.

Radscheit, Kurt: *See—*
Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,879,379.

Rager, Horst; Rohrig, Herbert; and Hirschel, Armin, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method of preparing polyvinyl chloride parts for ultrasonic welding. 3,879,239, Cl. 156-73.100.

Raleigh, Cecil B. Formation fracturing method. 3,878,884, Cl. 165-1.000.

Rambacher, Paul; and Make, Siegfried, to Diamalt Aktiengesellschaft. Method for treating dandruff. 3,879,534, Cl. 424-273.000.

Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Bicyclic hindered amino acids and metal salts thereof. 3,879,396, Cl. 260-270.00R.

Randolph, George J. J., Jr. Extensometer. 3,878,711, Cl. 73-88.50R.

Rankin, Paul B., Jr. Method of manufacturing paddle ball racquets. 3,879,250, Cl. 156-228.000.

Rankin, Paul B., Jr.: *See—*
Danchulis, James E.; and Rankin, Paul B., Jr., 3,879,035.

Ransaw, George. Device for combing or picking hair. 3,878,855, Cl. 132-9.000.

Rao, Ganta V.: *See—*
Gerrish, Oliver B., Sr.; and Rao, Ganta V., 3,879,373.

Ratowsky, Simon, to Monrick Holding Limited. Photographic processing apparatus. 3,879,119, Cl. 354-335.000.

Rauenbuehler, John A.: *See—*
Oakland, Frederic; Kunath, Elmer M.; and Rauenbuehler, John A., 3,879,695.

Ray, Morton. Air-cooled electric outboard motor. 3,878,809, Cl. 115-18.00E.

Ray, Sam Francis, to Secor Equipment Corporation. Portable self-propelled concrete mixer. 3,879,020, Cl. 259-177.00R.

Rayette-Faberge, Inc.: *See—*
Stohr, Christian; Grohmann, Klaus; and Wagner, Stegbert O., 3,878,580.

Raymond Lee Organization, Inc., The: *See—*
DeFelice, Victor A., 3,878,624.
George, Ernest R., 3,878,636.
Tuley, James R., 3,879,072.
Wilson, Marshall K., 3,878,741.

Raytheon Company: *See—*
Collins, John D., 3,879,661.
Robinder, Ronald C., 3,879,627.

RCA Corporation: *See—*
Arsem, A. Donald, 3,879,730.
Bosselaers, Robert Jan, 3,879,683.
Carlson, David Emil, 3,879,183.
Dusheck, George James, Jr., 3,879,720.
Golant, Benjamin; and Landry, Norman Richard, 3,879,690.
Lachocki, Eugene, 3,879,650.
Maxemchuk, Nicholad Frank; and White, Hugh Edward, 3,879,710.
McGrogan, Ellwood Patrick, Jr., 3,879,663.
Pyles, Gerald Dee, 3,879,758.
Schade, Otto Heinrich, Jr., 3,879,640.
Stark, John, Jr., 3,879,633.
White, Hugh Edward; and Maxemchuk, Nicholas Frank, 3,879,582.

Recherches Etudes Production R.E.P.: *See—*
Lucien, Rene, 3,878,866.

Reed, James B. Arrangement for obtaining distance traveled and ground speed of an aircraft. 3,878,612, Cl. 33-1.0SD.

Reed, Samuel M. Releasable fastener. 3,878,758, Cl. 85-32.00R.

Reed, Samuel M. Cable mount for speaker installation. 3,879,571, Cl. 174-65.00R.

Reeder, William M. Window accessories. 3,878,878, Cl. 160-246.000.

Reeves, James B.: *See—*
Schlosser, Leslie H.; and Reeves, James B., 3,879,581.

Regensburger, Paul J.; and Jakubowski, James J., to Xerox Corporation. Novel xerographic plate containing photoinjecting bis-benzimidazole pigments. 3,879,200, Cl. 96-1.500.

Rehman, Warren C.: *See—*
Einstman, William J.; Rehman, Warren C.; and Plant, Frank M., 3,879,565.

Reick, Franklin G., to Ebert, Michael, a part interest. Fluorocarbon-based sealing compound. 3,879,302, Cl. 252-25.000.

Reid, Robert E.: *See—*
Kablaoui, Mahmoud S.; Reid, Robert E.; and Godfrey, Arthur W., 3,879,306.

Reiff, Helmut: *See—*
Velker, Eugen; Bentz, Francis; and Reiff, Helmut, 3,879,450.

Reimers, James L., to FMC Corporation. Container arrester for hydrostatic cooker. 3,878,932, Cl. 198-26.000.

Reinhart, Norman E.: *See—*
Mullender, Claude; and Reinhart, Norman E., 3,879,242.
Reintjes, Marten: *See—*
Buchholz, Richard Frank; and Reintjes, Marten, 3,879,432.
Reisner, David B.; Ludwig, Bernard J.; Fukui, George M.; and Berger, Frank M., to Carter-Wallace, Inc. Method for suppressing histamine release. 3,879,544, Cl. 424-337.000.
Rejsa, Jack J.: *See—*
Ryan, Jack A.; Easter, Ross A.; and Rejsa, Jack J., 3,878,943.
Remond, Jean-Pierre: *See—*
Languille, Philippe; Vitat, Jean-Claude; Guillemont, Antony Roland; and Remond, Jean-Pierre, 3,879,297.
Rempel, Dietrich G., to Rempel Enterprises Inc. Fruit harvesting machine. 3,878,957, Cl. 214-508.000.
Rempel Enterprises Inc.: *See—*
Rempel, Dietrich G., 3,878,957.
Renold, Adolph, to Colgate-Palmolive Company. Diamine containing softener compositions. 3,879,300, Cl. 252-8.800.
Republic Steel Corporation: *See—*
Limes, Robert W.; and Russell, Robert O., 3,879,209.
Research Corporation: *See—*
Story, Paul Richard; Lee, Bunge; and Busch, Peter, 3,879,420.
Reskusic, Jakov: *See—*
Reskusic, Nikola; and Reskusic, Jakov, 3,878,807.
Reskusic, Nikola; and Reskusic, Jakov. Water intake strainer for use on boats. 3,878,807, Cl. 114-198.000.
Reynolds, Edward B.: *See—*
Fertl, Walter H.; and Reynolds, Edward B., 3,878,890.
Rhiem, Hans-Christoph: *See—*
Ney, Robert; and Rhiem, Hans-Christoph, 3,879,518.
Rhone-Poulenc S.A.: *See—*
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Blondel, Jean-Claude Rene Georges; Fouche, Jean Clement Louis; and Gueremy, Claude Georges Alexandre, 3,879,551.
Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, 3,879,390.
Rhone-Poulenc-Textile: *See—*
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Rhone-Progil: *See—*
Languille, Philippe; Vitat, Jean-Claude; Guillemont, Antony Roland; and Remond, Jean-Pierre, 3,879,297.
Riccio, Pasquale R., to Ciba-Geigy Corporation. Metered dose dispenser. 3,878,973, Cl. 222-319.000.
Richard, Gerard Y., to Societe d'Applications de Produits Industriels et Chimiques. Manufacture of solid or hollow bodies from a composition containing a granular filler. 3,879,339, Cl. 260-38.000.
Richard, Joseph D. Wide angle fish detector. 3,879,697, Cl. 340-3.00D.
Richards Manufacturing Company: *See—*
Bechtol, Charles O., 3,878,566.
Richards, Mildred C.: *See—*
Samour, Carlos M.; and Richards, Mildred C., 3,879,447.
Ricoh Co., Ltd.: *See—*
Kurokawa, Junji; and Tatumi, Susumu, 3,879,120.
Ridgeway, John Jerold, to Explo-Ridgeway International Limited, Channel Islands. Safety detonator device for detonating fusecord. 3,878,786, Cl. 102-27.00R.
Riedl, Hermann, to Siemens Aktiengesellschaft. Recording arrangement for the graphic reproduction of alpha-numerical indicia on a recording strip. 3,879,738, Cl. 346-76.00R.
Riegel, Herbert; and Schindler, Harvey D., to Lummus Company, The. Vinyl chloride process. 3,879,480, Cl. 260-656.00R.
Riegel, Herbert, to Lummus Company, The. Vinyl chloride process. 3,879,482, Cl. 260-656.00R.
Riegel, Herbert: *See—*
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Rigassi, Norbert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,879,429.
Rigge, Ronald J.; Olsen, Orrie C.; and Goetschel, Charles T., to Kaiser Aluminum & Chemical Corporation. Surface stabilized active alumina. 3,879,310, Cl. 252-435.000.
Riley, Francis Gerald. Gravity flow wetting and mixing device and mixing extension therefor. 3,879,021, Cl. 259-180.000.
Rimbaud, Henri, to Laboratoire SPAD. Hypodermic syringe with parts disposable after use. 3,878,846, Cl. 128-218.0DA.
Ring, Fred C. Hand truck with unloading linkage. 3,878,958, Cl. 214-511.000.
Ritter, Erwin A. Painting apparatus. 3,879,140, Cl. 401-188.000.
Riviere, Eugene; Vilarel, Danyele Yvette; Debrie, Roger Lucien; and Loiseau, Gerald Paul Marie Henri. Treatment of bilharziosis and filariasis employing the antimony salt of certain hydroxy quinolines. 3,879,549, Cl. 424-245.000.
Rizza, Michael C.: *See—*
Brown, Howard R.; and Rizza, Michael C., 3,878,644.
Rizzi, Ciro M. F.: *See—*
Hockley, Jack E.; and Rizzi, Ciro M. F., 3,879,081.
Roberson, Cletis L.; Russell, Robert G.; Stream, Ralph M.; and Leaman, Harold E., to Owens-Corning Fiberglas Corporation. Strand coating and doctoring apparatus. 3,878,813, Cl. 118-104.000.
Robert Bosch G.m.b.H.: *See—*
Grob, Alfred; Hans, Waldemar; and Staib, Helmut, 3,878,859.
Haubner, Georg; Hofer, Walter; and Schwarz, Karl-Gunter, 3,878,824.
Schmitt, Jakob; and Voit, Willy, 3,878,802.
Schulz, Alfred; and Honig, Gunther, 3,879,676.
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Gentile, Victor R.; Hepford, Richard R.; Jappe, Nicholas A.; Roberts, Clifford J., Jr.; and Steward, Gunnar E., 3,879,257.
Roberts, Gordon A. Smoke detection unit with dual purpose alarm circuit. 3,879,718, Cl. 340-251.000.
Robertson, Jackson P., Sr. Extra heavy duty multi-disc harrow with automatic level control. 3,878,901, Cl. 172-413.000.
Robinder, Ronald C., to Raytheon Company. Display tube with neutral density filtration. 3,879,627, Cl. 313-112.000.
Robotics, Incorporated: *See—*
Mosher, Ralph S., 3,878,652.
Rockaway Corporation: *See—*
Janda, Edward E., 3,878,795.
Rockway, John W.: *See—*
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Stripling, William W.; and Rodgers, Aubrey, 3,878,730.
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Rohrer, Gene D., to International Business Machines Corporation. Character recognition system for bar coded characters. 3,879,707, Cl. 340-146.30C.
Rohrig, Herbert: *See—*
Rager, Horst; Rohrig, Herbert; and Hirschel, Armin, 3,879,239.
Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
Preuss, Friedrich, 3,878,735.
Roll, William D., to University of Toledo, The. Methods and cyclopentyl benzamide compositions for producing depressant activity. 3,879,540, Cl. 424-324.000.
Rombach, Frank, to Nordson Corporation. Optical spray control system. 3,878,811, Cl. 118-2.000.
Ronson Products Limited: *See—*
Wright, David John, 3,879,163.
Rooks, Ernest F., to K'Son Corporation. Reconstruction of telephone dial signals. 3,879,583, Cl. 179-16.00E.
Roscoe, Gerald S.; and Vlack, Wayne F., to International Business Machines Corporation. Reader independent of variations in feed. 3,879,693, Cl. 235-61.11R.
Rose, Edgar, to Outboard Marine Corporation. Snowmobile track suspension system. 3,879,092, Cl. 305-24.000.
Rosendahl, Friedrich-Karl; Pelousek, Herbert; and Niederprum, Hans. Flame-resistant high molecular weight linear polyesters. 3,879,351, Cl. 260-75.00N.
Ross, Frank, to Velsicol Chemical Corporation. S-(1,1-dioxo-2,3-dihydro-3-benzothienyl) phosphorothioates. 3,879,419, Cl. 260-330.500.
Ross, Stephen T.: *See—*
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Rusch, Reinhard: *See—*
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Russ, Edward F., to Carrier Corporation. Tube coupling mechanism. 3,879,070, Cl. 285-342.000.
Russell, Robert G.: *See—*
Roberson, Cletis L.; Russell, Robert G.; Stream, Ralph M.; and Leaman, Harold E., 3,878,813.
Russell, Robert O.: *See—*
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Belov, Gennady Petrovich; Dzhabiev, Taimuraz Savelievich; Dyachkovsky, Fridrikh Stepanovich; Smirnov, Vyacheslav Ivanovich; Karpova, Nelli Dzhavkharovna; Brikenshtein, Khaim-Mordkhe Aronovich; Gerasina, Matrena Petrovna; Kuzmin, Vladimir Evgenievich; Matkovsky, Petr Evgenievich; Russiyan, Ljudmila Nikolaevna; Pomogailo, Anatoly Dmitrievich; and Chirkov, Nikolai Mikhailovich, deceased, 3,879,485.
Russo, Gerard. Cycle seat backrest. 3,879,087, Cl. 297-195.000.
Rust, Edgar C., Jr., to Crompton & Knowles Corporation. Apparatus for vibration welding of sheet materials. 3,879,256, Cl. 156-580.000.
Rutt, Truman C.; and Stynes, James A., to N L Industries, Inc. Ceramic capacitors. 3,879,645, Cl. 317-258.000.
Ryan, Jack A.; Easter, Ross A.; and Rejsa, Jack J., to Pillsbury Company, The. Shrink wrapped two component open end package and shipping carton. 3,878,943, Cl. 206-497.000.
Ryan, John W.: *See—*
Golden, Michael E.; Pearlman, Marshall B.; and Ryan, John W., 3,878,751.
Rys, Tadeusz J., to Square D Company. Safety switch having improved operating mechanism and interlock means. 3,879,589, Cl. 200-50.00A.

Ryu, Akinobu; Okumura, Takehiro; and Yoshinari, Yukio, to Hitachi, Ltd. High frequency-cut filter for a pen recorder. 3,879,736, Cl. 346-33.00R.

S.A.P.R.B. Societe Anonyme: *See—*
Goffart, Pierre R., 3,878,897.

S. C. Johnson & Son, Inc.: *See—*
Hagarty, John D., 3,879,407.

Saab-Scania AB: *See—*
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Saam, John C.: *See—*
Lindsey, Sarah E.; and Saam, John C., 3,879,491.

Sabadics, Joseph L.; and Ewald, John F., to General Foods Corporation. Steam nozzle. 3,878,991, Cl. 239-456.000.

Sabia, Raffaele Antonio: *See—*
Dobbin, Donald Patrick; Fritsch, Charles Anthony; and Sabia, Raffaele Antonio, 3,879,575.

Sade, Maurice, to Comptoir Lyonnais de Verrerie. Apparatus for lengthening cylindrical workpieces. 3,879,185, Cl. 65-279.000.

Saettone, Marco Fabrizio: *See—*
Bottari, Francesco; Saettone, Marco Fabrizio; Serafini, Maria Francesca; and Tellini, Natale, 3,879,410.

Saeva, Franklin D.; Levy, Mosher; Strella, Stephen; Pearson, James M.; and Williams, David J., to Xerox Corporation. Electrophotographic ambipolar photoconductive composition and imaging method. 3,879,198, Cl. 96-1.500.

Said, Sami I.; and Mutt, Viktor. Isolation of vasoactive intestinal peptide. 3,879,371, Cl. 260-112.500.

Saito, Mitsuru, to Minolta Camera Kabushiki Kaisha. Polarity indicating battery receptacle. 3,879,655, Cl. 324-29.500.

Saito, Yutaka; and Fukino, Kunihiro, to Nippon Kogaku K.K. Intermediate ring for interlocking an aperture ring with an exposure meter. 3,879,741, Cl. 354-46.000.

Sakai, Toshihiko: *See—*
Kawashima, Takayoshi; Tange, Akio; Yamamoto, Seiichi; Baba, Takashi; Kondo, Yutaka; Nozaki, Choji; and Sakai, Toshihiko, 3,879,056.
Kawashima, Takayoshi; Tange, Akio; Yamamoto, Seiichi; Baba, Takashi; Kondo, Yutaka; Nozaki, Choji; and Sakai, Toshihiko, 3,879,057.

Sakamoto, Teruhisa: *See—*
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Sakamoto, Yoichi, to Matsushita Electric Industrial Co., Ltd. Remote control device. 3,879,747, Cl. 358-1.000.

Sakamoto, Yoshihiro: *See—*
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 3,879,196.

Sakazaki, Tadazumi; and Ando, Hirokazu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Control circuit for an exposure meter. 3,879,137, Cl. 356-218.000.

Saliss Aluminium Ltd.: *See—*
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Samatov, Jury Petrovich; Emelyanenko, Vladimir Vasilievich; Litvinov, Nikolai Alexandrovich; Kavyarov, Ivan Savvateevich; and Kajukov, Vladimir Konstantinovich. Tractor frame structure. 3,878,912, Cl. 180-53.00R.

Samour, Carlos M.; and Richards, Mildred C., to Kendall Company, The. Monomeric emulsion stabilizers comprising a lipophilic diallyl or dimethallyl quaternary ammonium compound. 3,879,447, Cl. 260-482.00R.

Sandco Limited: *See—*
Bauer, Kunibert; and Guttinger, Manfred, 3,878,933.

Sanderson, Albert E., to Inventronics, Inc. Tuneable UJT oscillator circuit. 3,879,684, Cl. 331-111.000.

Sanderson, Leslie George, to Cambridge Scientific Instruments Limited. Blood pressure recorder. 3,878,834, Cl. 128-2.05M.

Sandner, Winfried: *See—*
Knechtel, Welhelm; Petersdorf, Gerhard; and Sandner, Winfried, 3,878,622.

Sandord, Peter Edgar: *See—*
Ellerton, Norman Vaughan; Paradise, William Frederick; and Sandord, Peter Edgar, 3,879,398.

Sandoz-Wander, Inc.: *See—*
Anderson, Paul L.; and Brittain, Darryl A., 3,879,449.
Gogerty, John H., 3,879,552.
Houlihan, William J.; and Nadelson, Jeffrey, 3,879,418.
Houlihan, William J.; and Nadelson, Jeffrey, 3,879,462.

Sands, Arthur E., to United States of America, Atomic Energy Commission. Method for dissolving ceramic beryllia. 3,879,520, Cl. 423-5.000.

Sarges, Reinhard: *See—*
Kuhla, Donald E.; and Sarges, Reinhard, 3,879,403.

Sartorius, Guy, to Societe des Aciers Fins de l'Est. Analog heat exchange computing system. 3,879,603, Cl. 235-151.100.

Sato, Eiji: *See—*
Matsumoto, Shun-ichi; and Sato, Eiji, 3,879,261.

Sato, Yasuhiko; and Hara, Yasuaki, to Shinetsu Chemical Company. Silicone resin molding compositions. 3,879,319, Cl. 260-18.00S.

Sato, Yasuhito: *See—*
Date, Tasuku; and Sato, Yasuhito, 3,878,826.

Saunders, Arthur D.: *See—*
Main, John E.; and Saunders, Arthur D., 3,878,736.

Sauvage, Lester R., to Providence Hospital. Vascular prosthesis with external pile surface. 3,878,565, Cl. 3-1.000.

Savary, Antoine: *See—*
Protta, Jean-Claude; and Savary, Antoine, 3,878,714.

Sawhney, Girish B.: *See—*
Ellis, Gaylor O.; Halat, John A.; and Sawhney, Girish B., 3,879,294.

Scarpero, William John, Jr.: *See—*
Cavaliere, Joseph Richard; and Scarpero, William John, Jr., 3,879,621.

Schaaf, Kurt H., to Diamond Shamrock Corporation. Process for preparing chlortetracycline neutral base. 3,879,456, Cl. 260-559.0AT.

Schacht, Lewis C. Method for sexual restraint of a bull. 3,878,845, Cl. 128-138.000.

Schade, Otto Heinrich, Jr., to RCA Corporation. Protective diode network for MOS devices. 3,879,640, Cl. 317-31.000.

Schaefer, Gerd: *See—*
Hensel, Jorg; Schaefer, Gerd; and Schreyer, Gerd, 3,879,457.

Schaefer, Henry A., to General Electric Company. Separable fastening device. 3,878,589, Cl. 24-222.00R.

Schantz, John S., to Schantz, Raymond G.; and Schantz, Socrates J., part interest to each. Barbeque post. 3,878,829, Cl. 126-41.00R.

Schantz, Raymond G.: *See—*
Schantz, John S., 3,878,829.

Schantz, Socrates J.: *See—*
Schantz, John S., 3,878,829.

Schaumann, Dietrich, to Hawera Probst Kommanditgesellschaft Hartmetall-Werkzeugfabric Ravensburgh. Drill, especially rock drill. 3,878,905, Cl. 175-383.000.

Scheelar, Lorne J.; and McGeorge, Linda Ann, to Lawrence Peska Associates, Inc., a part interest. Toy hand grenade. 3,878,639, Cl. 46-1.00R.

Scheffee, Robert Stephen: *See—*
Naismith, Robert; and Scheffee, Robert Stephen, 3,879,680.

Schele, Enrique. Apparatus for extruding thermoplastic annular shapes. 3,879,158, Cl. 425-380.000.

Schellenbaum, Max; Duennenberger, Max; and Casagrande, Fulvio, to Ciba-Geigy AG. Monohydroxyphenyl carbinols. 3,879,477, Cl. 260-619.00R.

Schenkel, Howard M.: *See—*
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Schering AG: *See—*
Boroschewski, Gerhard; Arndt, Frederich; and Rusch, Reinhard, 3,879,441.

Schering Aktiengesellschaft: *See—*
Berndt, Hans-Detlef; Steinbeck, Hermann; and Wiechert, Rudolf, 3,879,383.

Schering Corporation: *See—*
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Schildhorn, Bernd: *See—*
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Schindler, Harvey D.: *See—*
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Schlesser, Marie M.: *See—*
Udding, Anne C.; and Schlesser, Marie M., 3,879,312.

Schlossberg, Howard: *See—*
Milam, David; Schlossberg, Howard; and Szoke, Abraham, 3,879,686.

Schlosser, Leslie H.; and Moreno, Frank J., to Hughes Aircraft Company. Data terminal for use with TDMA processing repeater. 3,879,580, Cl. 179-15.0BS.

Schlosser, Leslie H.; and Reeves, James B., to Hughes Aircraft Company. Processing repeater for TDMA communication system. 3,879,581, Cl. 179-15.0BS.

Schmidt, Delf: *See—*
Frommer, Werner; Puls, Walter; and Schmidt, Delf, 3,879,546.

Schmitt, Jakob; and Voit, Willy, to Robert Bosch G.m.b.H. Motor housing and method of making the same. 3,878,802, Cl. 113-120.0UE.

Schmunk, John D., to Hancock Brick and Tile Company, The. Septic tank drainage tile. 3,878,685, Cl. 61-11.000.

Schnall, Gunther: *See—*
Eppe, Rudolf; Fryda, Georg; Mullritter, Ludwig; Schnall, Gunther; Schrecke, Hans-Joachim; Pfeifer, Josef; and Abbe, Gunther, 3,879,124.

Schneider, August Johannes, to Escher Wyss Limited. Decanter. 3,879,296, Cl. 210-512.00R.

Schneider, Michael, Sr. Shock load release clutch. 3,878,696, Cl. 64-29.000.

Schneider, Walter M., to Norwood Marking and Equipment Company. Inflated bag printing device with adjustable type drive. 3,878,776, Cl. 101-41.000.

Schnell, Hermann: *See—*
Serini, Volker; Vernaleken, Hugo; and Schnell, Hermann, 3,879,347.
Serini, Volker; Schnell, Hermann; and Vernaleken, Hugo, 3,879,348.

Schnuckel, Clemens: *See—*
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Schon, Erwin: *See—*
Schranz, Karl-Wilhelm; Muller, Reinhard; Schon, Erwin; and Hunicke, Wolfgang, 3,879,203.

Schonbeck, Rupert: *See—*
Diskus, Alfred; Schonbeck, Rupert; Kloimstein, Engelbert; and Mayr, Hubert, 3,879,391.

Schott, Stuart; Lum, David W.; and Mador, Irving L., to National Distillers and Chemical Corporation. Catalyst regeneration. 3,879,311, Cl. 252-415.000.

Schovee, John R., to Garlock Inc. Tape wrapping method, apparatus, and article. 3,879,001, Cl. 242-68.100.

Schranz, Karl-Wilhelm; Muller, Reinhard; Schon, Erwin; and Hunicke, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Process for bleach-fixing color photographic silver halide material. 3,879,203, Cl. 96-60.0BF.

Schrecke, Hans-Joachim: *See—*
Eppe, Rudolf; Fryda, Georg; Mullritter, Ludwig; Schnall, Gunther; Schrecke, Hans-Joachim; Pfeifer, Josef; and Abbe, Gunther, 3,879,124.

Schreyer, Gerd: *See—*
Hensel, Jorg; Schaefer, Gerd; and Schreyer, Gerd, 3,879,457.

Schroeder, Becky J. Luminescent backing sheet for writing in the dark. 3,879,611, Cl. 250-462.000.

Schroeder, Robert Edward: *See—*
Hamilton, Billy Harold; La Porta, Frank Carl; and Schroeder, Robert Edward, 3,879,647.

Schroter, Herbert; and Dennhardt, Werner, to Kalle Aktiengesellschaft. Apparatus for automatically controlling the speed of travel of an original and of copying material in a copying machine. 3,879,125, Cl. 355-68.000.

Schubert, Klaus; and Grohmann, Klaus, to Krups, Robert. Method for forming windings on rotors of electric motors or the like. 3,878,602, Cl. 29-598.000.

Schultz, Robert S., to Eyelet Specialty Company. Pressure operated dispensing container with special inlet for a plug seal. 3,878,975, Cl. 222-389.000.

Schulz, Alfred; and Honig, Gunther, to Robert Bosch G.m.b.H. Pulse train filter circuit particularly for automotive tachogenerators. 3,879,676, Cl. 331-10.000.

Schulz, Gerald O.: *See—*
Milkovich, Ralph; Chiang, Mutong T.; and Schulz, Gerald O., 3,879,494.

Schulz, Horst, to Fichtel & Sachs AG. Two-speed hub for bicycles with back-pedalling brake. 3,878,737, Cl. 74-750.00B.

Schurger, Joseph A., to Borg-Warner Corporation. Bypass valve. 3,878,864, Cl. 137-596.130.

Schuurs, Antonius Hermanus Wilhelmus Maria; and Van Weemen, Bauke Klaas, to Akzona Incorporated. Detection and determination of haptens. 3,879,262, Cl. 195-63.000.

Schwartz, Nelson N.: *See—*
Huntzinger, Elwood E.; and Schwartz, Nelson N., 3,879,313.

Schwarz, Karl-Gunter: *See—*
Haubner, Georg; Hofer, Walter; and Schwarz, Karl-Gunter, 3,878,824.

Schwarz, Klaus, to University of California, The Regents of the. Employment of selenium compounds in living organisms. 3,879,538, Cl. 424-319.000.

Schwarzmann, Gunter: *See—*
Holtschmidt, Ulrich; and Schwarzmann, Gunter, 3,879,458.

Schwender, Charles F.; and Shavel, John, Jr., to Warner-Lambert Company. 5-hydroxy-α(substituted aminomethyl)-mu-xylene-α,α-diols. 3,879,442, Cl. 260-471.00R.

Schwieter, Ulrich: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,879,429.

Scott, Julian Portway; and Beale, Julian Robert Anthony, to U.S. Philips Corporation. Methods of manufacturing semiconductor devices. 3,879,613, Cl. 250-492.000.

Scott Paper Company: *See—*
Gentile, Victor R.; Hepford, Richard R.; Jappe, Nicholas A.; Roberts, Clifford J., Jr.; and Steward, Gunnar E., 3,879,257.

Scott, Walter T.; and Williams, Frank J., to Apex Molded Products Company. Mounting device. 3,879,024, Cl. 267-136.000.

Seabourn, Ed O., to Phillips Petroleum Company. Method and apparatus for well bore work. 3,878,889, Cl. 166-.500.

Seaman, Benjamin C. Denture measurement means. 3,878,611, Cl. 32-71.000.

Seamans, James S.; Neuman, John A.; and MacKinnon, Malcom C. Display and dispensing cabinet. 3,879,095, Cl. 312-45.000.

Seaverns, Robert G.: *See—*
Wolf, Ludwig, Jr.; and Seaverns, Robert G., 3,879,293.

Sebag, Henri: *See—*
Vanlerberghe, Guy; and Sebag, Henri, 3,879,376.

Seckel, Thomas G.; and Waz, Edward M., to Eastman Kodak Company. Tone correction apparatus for color analyzers. 3,879,750, Cl. 358-76.000.

Secor Equipment Corporation: *See—*
Ray, Sam Francis, 3,879,020.

Seelbach, William R., to Petroleum Reclaiming Corporation. Oil reclaimer. 3,879,264, Cl. 196-46.100.

Seeley, Leonard, to C. R. Bard, Inc. Urine collection device. 3,878,571, Cl. 4-110.000.

Segawa, Kiyoshi; Nakamura, Yasushi; Tokumitsu, Naoki; and Harashima, Kazuumi, to Nippon Steel Corporation. Electroslag-remelting method. 3,879,192, Cl. 75-10.00C.

Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Matched phase shifter. 3,879,689, Cl. 333-29.000.

Seidl, George H. Heat exchanger. 3,878,888, Cl. 165-128.000.

Seidl, Pavel; and Mladek, Milos, to Elitex Zavody textilniho strojirenstvi, generalni reditelstvi. System for measuring the twist of spun yarn in open-end spinning. 3,878,671, Cl. 57-34.00R.

Sekmakas, Kazys; and Yates, Robert O., to DeSoto Inc. Coating compositions containing surface active addition polymers. 3,879,340, Cl. 260-40.00R.

Sellstedt, John H.; and Teller, Daniel M., to American Home Products Corporation. 7-(2-Carbamoy L-1-oxaspiro(2,x)alkane-carboxamido) penicillanic acids. 3,879,381, Cl. 260-239.100.

Sellstedt, John H., to American Home Products Corporation. Process for preparing anhydropenicillins. 3,879,408, Cl. 260-306.70R.

Sellstedt, John H.: *See—*
Teller, Daniel M.; and Sellstedt, John H., 3,879,384.
Teller, Daniel M.; Sellstedt, John H.; and Guinosso, Charles J., 3,879,385.

Selman, Charles M., to Phillips Petroleum Company. Modification of polymer-lithium coupled with polyhalides. 3,879,366, Cl. 260-94.300.

Sencore, Inc.: *See—*
Baum, Robert E., 3,879,749.

Senkingwerk GmbH: *See—*
Steinort, Hans, 3,878,699.

Serafini, Maria Francesca: *See—*
Bottari, Francesco; Saettone, Marco Fabrizio; Serafini, Maria Francesca; and Tellini, Natale, 3,879,410.

Serini, Volker; Vernaleken, Hugo; and Schnell, Hermann, to Bayer Aktiengesellschaft. High molecular, statistical copolycarbonates. 3,879,347, Cl. 260-47.0XA.

Serini, Volker; Schnell, Hermann; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Saponification-resistant polycarbonates. 3,879,348, Cl. 260-47.0XA.

Sexsmith, Frederick H.: *See—*
Manino, Louie G.; and Sexsmith, Frederick H., 3,879,337.

Shaffer, Howard Richard, to AMP Incorporated. Flat fexible cable connector assembly including insulation piercing contacts. 3,879,099, Cl. 339-99.00R.

Shakespeare Company: *See—*
McClain, Philippe Hard-The; and Velte, Carl J., 3,879,002.

Shannon, James E.; and Westphal, Richard C., to Foster Grant Co., Inc. Ethylene-vinyl acetate and high cis-polybetadiene graft prepared with sequent mercaptor addition. 3,879,321, Cl. 260-23.70R.

Shavel, John, Jr.: *See—*
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von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., 3,879,427.

Shaw, Herbert John. Circulating acoustic surface wave. 3,879,673, Cl. 330-5.500.

Shea, Frank M., to United States of America, Air Force. Method of forming fragmentation wrap for explosive weapons. 3,878,704, Cl. 72-326.000.

Shell Oil Company: *See—*
Carr, John B.; and Hass, Duane K., 3,879,533.
Hass, Duane K.; and Carr, John B., 3,879,532.
Udding, Anne C.; and Schlesser, Marie M., 3,879,312.

Shelton, Lawrence S., to Signode Corporation. Method and apparatus for assembling strips of fasteners. 3,878,663, Cl. 53-3.000.

Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. Synergistic combinations containing organobromine compounds and their use in the control of aerobacter aerogenes. 3,879,513, Cl. 424-277.000.

Shema, Bernard F.; and Brink, Robert H., Jr., to Betz Laboratories, Inc. Slime control compositions and their use. 3,879,559, Cl. 424-270.000.

Sherman, Jack; Vigneault, Ronald R.; and Colpitts, David A., to United States of America, Navy. Method for injection molding of explosive and pyrotechnic material. 3,879,504, Cl. 264-3.00C.

Sherwin, Owen W.: *See—*
Hansen, Ralph C.; Vande Water, Rae E.; and Sherwin, Owen W., 3,878,942.

Sherwin-Williams Company, The: *See—*
Mathai, John; and Chettiath, Jose J., 3,879,320.

Sherwood Medical Industries, Inc.: *See—*
Joslin, Joel A.; and Vogler, John C., 3,878,967.

Shillito, Terence Graham. Temperature measurement and control of rotating surfaces. 3,879,594, Cl. 219-10.490.

Shimada, Minoru: *See—*
Miyata, Shigeo; Kumura, Teruhiko; and Shimada, Minoru, 3,879,523.
Miyata, Shigeo; Kumura, Teruhiko; and Shimada, Minoru, 3,879,525.

Shinetsu Chemical Company: *See—*
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Shintani, Sotokichi: *See—*
Yanagidaira, Hidetaka; Kawai, Kazuo; Shintani, Sotokichi; and Furuya, Katsuhiko, 3,879,671.

Shirahase, Reiji, to Canon Kabushiki Kaisha. Sheet distributor device. 3,879,032, Cl. 271-64.000.

Shirback, Dennis G.: *See—*
Grosewald, Peter S.; and Shirback, Dennis G., 3,879,278.

Shirota, Kensho: *See—*
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Shoji, Magozo; and Noguchi, Tamiharu, to Matsushita Electric Works, Ltd. Printed electric circuit containing polybenzimidazole printing ink composition. 3,879,572, Cl. 174-68.500.

Shorrock Developments Limited: *See—*
Buckley, Norman Ian; and Mansfield, Brian Michael, 3,879,719.

Show Denk Kabushiki Kaisha: *See—*
Nakamura, Sigeru; Taguchi, Mitsuru; Naniwada, Satoru; and Ohguri, Naoki, 3,879,181.

Shugarman, Alvin E.; Shugarman, Lynn E.; and Linder, Lowell E., to Gamm-Tech Inc. Lockable solderless electrical connector. 3,879,104, Cl. 339-266.00R.

Shugarman, Lynn E.: *See—*
Shugarman, Alvin E.; Shugarman, Lynn E.; and Linder, Lowell E., 3,879,104.
Shulman, Valerie. Instrument for applying a viscous liquid. 3,879,141, Cl. 401-265.000.
Siegele, Frederick Herman. Process of inhibiting scale formation on walls of structures containing an aqueous system. 3,879,288, Cl. 210-58.000.
Siemens Aktiengesellschaft: *See—*
Riedl, Hermann, 3,879,738.
Veith, Werner; and Welsch, Wolfgang, 3,879,714.
Sierra Research Corporation: *See—*
Mancone, Joseph G., 3,879,702.
Sievenpiper, Donald A., to General Signal Corporation. Compensated multi-function hydraulic system. 3,878,679, Cl. 60-422.000.
Signatron, Inc.: *See—*
Monsen, Peter, 3,879,664.
Signode Corporation: *See—*
Shelton, Lawrence S., 3,878,663.
Silec-Semi-Conducteurs: *See—*
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Sill, Mark N.; and Miller, Delton F., to Marksill Specialties Inc. Vehicle stabilizing device. 3,879,055, Cl. 280-150.500.
Silva, John R., to General Signal Corporation. Pressure to electrical analog rate of flow signal generator. 3,878,717, Cl. 73-205.00R.
Silver, Jules: *See—*
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Simokawa, Yuji: *See—*
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Simpson, Henry Wellington, to International Business Machines Corporation. Transfer system. 3,879,121, Cl. 355-3.00R.
Simpson, Murray, to Maxson Electronics Corporation. Multi-directional barrage jamming system. 3,879,732, Cl. 343-18.00E.
Singer Company, The: *See—*
Collier, James R.; and Smith, Randel R., 3,878,800.
Hickey, Roy E., 3,879,112.
Singleton, Michael J.: *See—*
Bersin, Richard L.; and Singleton, Michael J., 3,879,597.
Sircom, Richard C., to Federal Pacific Electric Company. Ground fault interrupters. 3,879,639, Cl. 317-18.00D.
Sisarakenneteollisuus Oy Sirate AB: *See—*
Kankkunen, Kauko, 3,879,016.
SKF Kugellagerfabriken Gesellschaft: *See—*
Kohler, Gisert, 3,878,672.
Skinner, Kenneth Charles, to Helipebs Limited. Method and apparatus for producing rolled metal balls from bars or rods. 3,878,701, Cl. 72-71.000.
Skudrna, Oldrich. Film squeegee. 3,878,578, Cl. 15-100.000.
Slack, Ramon Allan; and Talbot, David N. A. Lightweight boat trailer. 3,879,060, Cl. 280-414.00B.
Slagle, Floyd M.: *See—*
Hageman, John A.; Slagle, Floyd M.; and Throckmorton, Raymond T., Jr., 3,878,686.
Smart, Jay A. Adjustable header with removable facing cover. 3,878,583, Cl. 16-95.00R.
Smirnov, Vyacheslav Ivanovich: *See—*
Belov, Gennady Petrovich; Dzhabiev, Taimuraz Savelievich; Dyachkovsky, Fridrikh Stepanovich; Smirnov, Vyacheslav Ivanovich; Karpova, Nelli Dzhavkharovna; Brikenshtein, Khaim-Mordkhe Aronovich; Gerasina, Matrena Petrovna; Kuzmin, Vladimir Evgenievich; Matkovsky, Petr Evgenievich; Russiyan, Ljudmila Nikolaevna; Pomogailo, Anatoly Dmitrievich; and Chirkov, Nikolai Mikhailovich, deceased, 3,879,485.
Smit, Henry, to Tassell, Leslie E., a part interest. Double acting traveling bolster apparatus for presses. 3,878,773, Cl. 100-53.000.
Smith, Donald W.; Beaty, Ronald W.; and Barber, Harry A., to Barber-Greene Company. Method and apparatus for providing grade control for the screed of a paver or the like. 3,879,149, Cl. 404-72.000.
Smith, Ernest W. Can opener with automatic cutter disengagement. 3,878,604, Cl. 30-4.00R.
Smith International, Inc.: *See—*
Tschirky, John E.; and Crase, Gary Monroe, 3,879,094.
Smith, Jessop, to Triple-S Development Co., Inc. Weather-proof enclosure for video camera or the like having centrifugal action window cleaner. 3,879,742, Cl. 354-64.000.
Smith, Lowell R., to Monsanto Company. Process for preparing 1,2,3-trichloropropene. 3,879,479, Cl. 260-654.00H.
Smith, Ora O., to Kraftco Corporation. Line purging deyice. 3,878,579, Cl. 15-104.06R.
Smith, Randel R.: *See—*
Collier, James R.; and Smith, Randel R., 3,878,800.
Smith, Richard G.; and Stewart, James K., to A. E. Staley Manufacturing Company. Vacuum dried condiments. 3,879,561, Cl. 426-535.000.
Smith, Robert J. Method and apparatus for forming articles from plastic sheet material. 3,879,159, Cl. 425-388.000.
Smith, W. Ronald. Three-dimensional tic-tac-toe game apparatus. 3,879,040, Cl. 273-130.0AC.
SmithKline Corporation: *See—*
Kaiser, Carl; and Ross, Stephen T., 3,879,557.
Snyder, David E., to Otis Engineering Corporation. Pilot valve system. 3,878,863, Cl. 137-553.000.
Societa' Farmaceutici Italia S.p.A.: *See—*
Temperilli, Aldemio, 3,879,554.
Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
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Societe Anonyme dite: Laboratoire Roger Bellon: *See—*
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Societe Anonyme dite: L'Oreal: *See—*
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Kalopissis, Gregoire, 3,879,560.
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Societe Anonyme Pechiney Ugine Kuhlmann: *See—*
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Societe Anonyme: Produits Chimiques Ugine Kuhlmann: *See—*
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Societe d'Applications de Produits Industriels et Chimiques: *See—*
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Societe d'Equipements, Manutentions et Transports (S.E.M.A.T.): *See—*
Colin, Marcel Victor Auguste, 3,878,949.
Societe des Aciers Fins de l'Est: *See—*
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Societe Produits Chimiques Ugine-Kuhlmann: *See—*
Deronzier, Jean Claude; Foulletier, Louis; Huyghe, Jean; and Niezborala, Jean Marc, 3,878,885.
Sodder, George, Jr.; Fish, Samuel Eugene; and Palmer, Oliver Ellsworth. Longwall mining system. 3,879,088, Cl. 299-31.000.
Soderstrom, Lars, to Centro-Metalcut AB. Circular saw blade. 3,878,747, Cl. 83-835.000.
Sodifac S.A.: *See—*
Morel, Andre, 3,879,085.
Solvay & Cie: *See—*
Vanlautem, Noel; and Donzel, Alain, 3,879,483.
Sonoyama, Yuzo: *See—*
Furukawa, Shogi; Sonoyama, Yuzo; and Ohi, Akira, 3,879,345.
Sony Corporation: *See—*
Okada, Takashi; Sumiya, Hirouyki; and Imayasu, Tomoyoshi, 3,879,576.
Sopp, Samuel W.: *See—*
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Soreghy, Ivan L.: *See—*
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Sorensen, George C. Distillation apparatus. 3,879,266, Cl. 202-236.000.
Sotiropoulos, Hippocrates; and Tsaprazis, Euripedes, to Olympic Metronics, Inc. Dimension-measuring apparatus and method. 3,878,984, Cl. 235-151.320.
Soto, William S. Separable fastener assembly. 3,878,588, Cl. 24-208.000.
Sousa, Anthony A.: *See—*
Durden, John A.; and Sousa, Anthony A., 3,879,468.
Soya, Masahiro: *See—*
Sugiyama, Shigeo; Soya, Masahiro; and Amemori, Hiroyuki, 3,878,718.
Spadaro, Peter R.: *See—*
Atherton, Richard; Spadaro, Peter R.; and Brummerhop, Frank G., 3,878,870.
Spalding, Robert S. Instrument and method for measuring and indicating speed of a moving, sound-emitting object. 3,878,729, Cl. 73-488.000.
Speakman Company: *See—*
Lagarelli, Carmen J., 3,879,064.
Spence, Larry A. Oral cavity controlled electronic musical instrument. 3,878,748, Cl. 84-1.050.
Sperry Rand Corporation: *See—*
Aspinwall, Ronald A.; and Graham, MacKellar K., 3,879,289.
Ellis, Gaylor O.; Halat, John A.; and Sawhney, Girish B., 3,879,294.
Sperry Rand Limited: *See—*
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Sprague & Henwood, Inc.: *See—*
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Sprinkle, Larry W.: *See—*
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Square D Company: *See—*
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Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 3-Amino-cardenolides and process for their manufacture. 3,879,379, Cl. 260-239.570.
Stagg, Gerald W. Passively acquired bearing to active sonar source. 3,879,701, Cl. 340-6.00R.
Stahl-Urban Company: *See—*
Conner, William R., Jr., 3,878,801.
Staib, Helmut: *See—*
Grob, Alfred; Hans, Waldemar; and Staib, Helmut, 3,878,859.
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De Rooij, Abraham H.; and Goettsch, Reijer, 3,879,380.
Van Der Loos, Jozef L. M., 3,879,323.

Stampfli, Harald, to Lucifer S.A. Support device for fluid control systems. 3,879,068, Cl. 285-137.00R.

Standke, William W.: *See—*
Daehlin, O. Theodore; Standke, William W.; and Walters, Wayne L., 3,879,687.

Stange, Ronald R.; and Ward, Gary B., to Tools for Bending, Inc. Tube shaping apparatus for radius-bending, end-flaring and the like. 3,878,720, Cl. 72-310.000.

Stanley Works, The: *See—*
Crocker, Samuel Lincoln, 3,878,646.
Freeman, Philip Martin, 3,878,618.
West, Robert Ferguson; and De Jong, Maarten Cornelis, 3,878,617.

Stant Manufacturing Company, Inc.: *See—*
Crute, Billy G., 3,878,965.

Stapp, Paul R., to Phillips Petroleum Company. Preparation of ethers from alcohols and olefins catalyzed by iodine. 3,879,473, Cl. 260-614.00A.

Stark, John, Jr., to RCA Corporation. Television degaussing system with saddle-type coils adjacent CRT cone. 3,879,633, Cl. 315-8.000.

Staudte, Walter J., Jr. Apertured panel bracket. 3,879,006, Cl. 248-223.000.

Stauffer Chemical Company: *See—*
Baker, Don R.; and Teach, Eugene G., 3,879,421.
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Uhing, Eugene H.; and Toy, Arthur D. F., 3,879,500.

Steinbeck, Hermann: *See—*
Berndt, Hans-Detlef; Steinbeck, Hermann; and Wiechert, Rudolf, 3,879,383.

Steinort, Hans, to Senkingwerk GmbH. Continuous washing machine. 3,878,699, Cl. 68-145.000.

Stenzenberger, Volkmar; and Wagensonner, Eduard, to Agfa-Gevaert Aktiengesellschaft. Sound film camera with damping circuit. 3,879,114, Cl. 352-29.000.

Sternbach, Leo Henryk; and Walser, Armin, to Hoffmann-La Roche Inc. Preparation of triazolobenzodiazepines. 3,879,406, Cl. 260-296.00T.

Sternbach, Leo Henryk: *See—*
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Stevenson, Duncan G., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Stabilized horizon plane system. 3,878,805, Cl. 114-43.500.

Steves, Ray R., to Garrett Corporation, The. Aircraft cabin cooling method and apparatus. 3,878,692, Cl. 62-87.000.

Steward, Gunnar E.: *See—*
Gentile, Victor R.; Hepford, Richard R.; Jappe, Nicholas A.; Roberts, Clifford J., Jr.; and Steward, Gunnar E., 3,879,257.

Steward, John H., to Multifastener Corporation. Method of forming a nut and panel assembly. 3,878,598, Cl. 29-432.200.

Steward, John H.: *See—*
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Stewart, James K.: *See—*
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Stirzel, Adolf: *See—*
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Stohr, Christian; Grohmann, Klaus; and Wagner, Stegbert O., to Rayette-Faberge, Inc. Brush. 3,878,580, Cl. 15-159.00A.

Stoliker, Harry E., to Parke, Davis & Company. Anesthetic compositions and methods of use. 3,879,535, Cl. 424-273.000.

Stone Construction Equipment, Inc.: *See—*
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Storch, Wilhelm: *See—*
Broche, Werner; Ignatius, Albert; Brand, Gunter; Stirzel, Adolf; and Storch, Wilhelm, 3,879,105.

Storck, Gerhard; Diefenbach, Horst; Marx, Matthias; Nagel, Otto; Kuerten, Heribert; and Weinle, Werner, to Badische Anilin- Soda-Fabrik Aktiengesellschaft. Production of pigmented resin powders. 3,879,335, Cl. 260-37.0EP.

Storr, Kenneth; and Bonnafe, Marcel, to Technicon Instruments Corporation. Method of sample preparation for sample analysis. 3,879,127, Cl. 356-36.000.

Story, Paul Richard; Lee, Bunge; and Busch, Peter, to Research Corporation. Method of producing mixed tricycloalkylidene peroxides. 3,879,420, Cl. 260-338.000.

Strack, Richard R., to American Optical Corporation. Method of making minature prisms. 3,879,182, Cl. 65-37.000.

Stragier, Marcel G. Non-stop refuse collection method. 3,878,953, Cl. 214-152.000.

Stream, Ralph M.: *See—*
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Strella, Stephen: *See—*
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Stripling, William W.; and Rodgers, Aubrey, to United States of America, Army. Vented rotor gyroscope. 3,878,730, Cl. 74-5.700.

Strobel, Albert Frederick, to GAF Corporation. Sun-screening compounds III. 3,879,443, Cl. 260-472.000.

Stuber, Fred A.: *See—*
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Stults, Allan C.; Powell, Raymond H.; and O'Brian, Edward D. Bicycle wheel ornament. 3,879,089, Cl. 301-37.0SA.

Sturkol, Elmer Wilbert: *See—*
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Stynes, James A.: *See—*
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Sulzer Brothers Ltd.: *See—*
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Sumitomo Chemical Company, Limited: *See—*
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Summerlin, Frederick Arthur: *See—*
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Sureau, Robert Frederic Michel: *See—*
Domergue, Annick Marthe Suzanne Simone; and Sureau, Robert Frederic Michel, 3,879,417.

Surmatis, Joseph Donald; and Walser, Armin, to Hoffmann-La Roche Inc. Intermediate for the synthesis of zeaxanthins, xanthophylls, and 3-β-carotene. 3,879,424, Cl. 260-340.900.

Suter, Hubert: *See—*
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Sutton, Anthony Hubert: *See—*
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Suvanto, Antti: *See—*
Persson, Nils Olof; Suvanto, Antti; Tornblom, Lars; and Haga, Ingvald, 3,879,259.

Suyderhoud, Jaap. Water ski slalom course and method therefor. 3,878,576, Cl. 9-8.00R.

Suzuki, Isamu; Ishida, Shinichi; Ohshima, Noboru; Masamoto, Junzo; and Ohtake, Junzo, to Asahi Kasei Kogyo Kabushiki Kaisha. Ammonium salts and polymerization of formaldehyde therewith. 3,879,350, Cl. 260-67.0FP.

Sven Goran Pettersson: *See—*
Berggren, Rolf Uno; and Blom, Erik Gustav Birger, 3,878,632.

Swank, H. Douglas: *See—*
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Swartwood, Richard V.: *See—*
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Swartz, Earl E.; and Viterisi, Domenick P., to United States of America, Air Force. Electronic tuning system for high power cavity oscillators. 3,879,682, Cl. 331-96.000.

Sweany, Louis P., to P. R. Mallory & Co. Inc. Audible alarm unit. 3,879,726, Cl. 340-384.00E.

Sweeney, Richard F.: *See—*
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SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH: *See—*
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Syntex (U.S.A.), Inc.: *See—*
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Sze, Morgan C.; and Riegel, Herbert, to Lummus Company, The. Production of vinyl chloride. 3,879,481, Cl. 267-656.00R.

Szoke, Abraham: *See—*
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Taguchi, Mitsuru: *See—*
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Taguchi, Tetsuya: *See—*
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Takahashi, Noriyuki; Inoue, Hidehiko; and Toshimitsu, Yoshihiko, to Honda Giken Kogyo Kabushiki Kaisha. Oil-hydraulic servo-motor. 3,878,682, Cl. 60-547.000.

Takano, Ikuo: *See—*
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Takechi, Hiroshi: *See—*
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Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Apparatus for applying wax to vehicles to be polished. 3,878,812, Cl. 118-2.000.
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Takimoto, Yasukatu. Locking apparatus for punch-type file. 3,879,142, Cl. 402-25.000.
Takishima, Yoshiyuki: *See—*
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Taylor, Clyde L.; and Jordan, Russell E. Seed bed shaping apparatus with automatic means for applying pressure to the soil. 3,878,799, Cl. 111-59.000.
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Tedesco, Raffaele: *See—*
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Tee, Liong-Hian, to Urban Wood & Fiber Products, Inc. Apparatus and process for treating waste wood. 3,878,994, Cl. 241-24.000.
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Teller, Daniel M.; Sellstedt, John H.; and Guinosso, Charles J., to American Home Products Corporation. 3-(Alpha-trifluoromethylarylacetamido)-1,4-cyclo(1,-carboxyl)alkylenethio)-azetidin-2-one derivatives. 3,879,385, Cl. 260-243.00C.
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Thompson, Tom H., to Hauke, Robert C.; and Petalidis, Claude A. Tube corrugating apparatus and method. 3,878,707, Cl. 72-354.000.
Thompson, Woodrow F. Load levelling and anti-sway trailer hitch. 3,879,061, Cl. 280-405.00R.
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Tilles, Harry, to Stauffer Chemical Company. Herbicide compositions. 3,879,455, Cl. 260-551.00R.
Timmler, Helmut; Buchel, Karl-Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. 9-Azolyl-(1)-fluorene-9-carboxylic acid derivatives and their production. 3,879,558, Cl. 424-269.000.
Timmons, Robert D.; and Castro, Anthony J. Solvent-free, aqueous resin dispersion. 3,879,324, Cl. 260-29.2EP.
Tobias, William Raymond. Body restrainer. 3,878,844, Cl. 128-134.000.
Tobol, Helen K., to Dow Chemical Company, The. Control of rice blast with 4-halo-carbostyrils and -isocarbostyrils. 3,879,553, Cl. 424-258.000.
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Tomonaga, Atsushi, to Kureka Kagaku Kogyo Kabushiki Kaisha; and Toyo Boseki Kabushiki Kaisha. Novel structure of electrode in a primary battery for utilization of liquid or gaseous electrode active material. 3,879,226, Cl. 136-100.00R.
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Toyoda, Sadao; Ogoshi, Toshiaki; and Maruyama, Minoru, to Lion Fat & Oil Co., Ltd. Sulfonation device capable of forming uniform film of feed material. 3,879,172, Cl. 23-284.000.
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Treiber, Fritz F., to Hobart Corporation. Packaging apparatus. 3,878,909, Cl. 177-145.000.
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Tulis, Jerry J., to Becton, Dickinson and Company. Electric heating assembly for sterilant packages. 3,879,171, Cl. 21-81.000.
Turner, John, to Geo W. King Limited. Floor conveyors. 3,878,793, Cl. 104-172.0BT.
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Uhl, John Phillip; and Kim, Ki Hong, to Illinois Tool Works Inc. Method and apparatus for forming metallized film capacitors. 3,879,174, Cl. 29-25.420.
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Varsanyi, Denis; and Roth, Willy, to Geigy Chemical Corporation. 2-Guanadino-4,6-bis-amino-S-triazines. 3,879,388, Cl. 260-249.600.

Vartanian, Richard D., to Ford Motor Company. Carburetor venturi vacuum and engine manifold vacuum controlled exhaust gas recirculating. 3,878,823, Cl. 123-119.00A.

Vasquez, Ruben S., to Clampco, Incorporated. Particulate material dispenser. 3,878,974, Cl. 222-342.000.

Veasey, Lee G., Jr.: *See—*
Kallianos, Andrew G.; Veasey, Lee G., Jr.; and Warfield, Albert H., 3,878,851.

Veb Leuna-Werke "Walter Ulbricht": *See—*
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Veeder Industries Inc.: *See—*
Gamble, John G., 3,879,601.

Veith, Werner; and Welsch, Wolfgang, to Siemens Aktiengesellschaft. Method of recording information with a picture storage tube and reading without erasing the information. 3,879,714, Cl. 340-173.0CR.

Velker, Eugen; Bentz, Francis; and Reiff, Helmut, to Bayer Aktiengesellschaft. Salts of 3-hydroxy-2-hydroxymethyl-propane-sulfonic acid-1. 3,879,450, Cl. 260-513.00R.

Velo-Bind, Inc.: *See—*
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Velsicol Chemical Corporation: *See—*
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Velte, Carl J.: *See—*
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Venables, Susan Mary; and Watson, Charles Andrew, to Lever Brothers Company. Toothpastes. 3,878,938, Cl. 206-84.000.

Verbanc, John Joseph: *See—*
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Vermont American Corporation: *See—*
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Vernaleken, Hugo: *See—*
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Serini, Volker; Schnell, Hermann; and Vernaleken, Hugo, 3,879,348.

Verner, Dalton R., to Colt Industries Operating Corporation. Method for electrical discharge machining employing periodic extended pulse off time. 3,879,596, Cl. 219-69.00M.

Verner, Reese D., to Honey-Tein Products, Inc. Method of preparing a dried honey tablet. 3,879,567, Cl. 426-311.000.

Vidar Corporation: *See—*
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Vidon, Bruno: *See—*
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Vilarel, Danyele Yvette: *See—*
Riviere, Eugene; Vilarel, Danyele Yvette; Debrie, Roger Lucien; and Loiseau, Gerald Paul Marie Henri, 3,879,549.

Villa, Jose L., to Thiokol Corporation. Inherently mold-releasable mold or casting composition. 3,879,490, Cl. 260-836.000.

Villanueva, Raul. Adjustable supportive and dynamic orthotic device. 3,878,841, Cl. 128-78.000.

Vitat, Jean-Claude: *See—*
Languille, Philippe; Vitat, Jean-Claude; Guillemont, Antony Roland; and Remond, Jean-Pierre, 3,879,297.

Viterisi, Domenick P.: *See—*
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Vitzthum, Otto; and Hubert, Peter, to HAG Aktiengesellschaft. Process for the decaffeination of raw coffee. 3,879,569, Cl. 426-427.000.

Vlack, Wayne F.: *See—*
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Vogel, John R.: *See—*
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Voit, Willy: *See—*
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Volmari, Josef: *See—*
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VonBaeckmann, Adolf; and Neuber, Jurgen, to Gesellschaft fur Kernforschung m.b.H. Device for the determination of concentrations of fissile and/or fertile materials by means of x-ray fluorescence spectrometry. 3,879,609, Cl. 250-278.000.

von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., to Warner-Lambert Company. Derivatives of polycyclic gamma-pyrones. 3,879,427, Cl. 260-345.200.

Vora, Bipin V., to Universal Oil Products Company. Hydrogen fluoride alkylation utilizing a heat exchanger in the settling zone. 3,879,487, Cl. 260-683.480.

Vora, Bipin V.: *See—*
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Vossen, Werner, to Mannesmann Aktiengesellschaft. Apparatus for applying reinforcing sleeve. 3,879,252, Cl. 156-423.000.

Vredenburgh, Walter A.; and Douglas, Paul S., to Hercules Incorporated. Composition for sizing and retexturizing fabrics. 3,879,334, Cl. 260-33.6UA.

W-T Industries, Inc.: *See—*
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Wagensonner, Eduard: *See—*
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Wagner, Stegbert O.: *See—*
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Waldbillig, James O., to Texaco Inc. Graft polymers and lubricant compositions thereof. 3,879,304, Cl. 252-51.50A.

Walker, Alexander D. R., to N-Dimensions, Inc. Keyboard. 3,879,602, Cl. 235-145.00R.

Walker, David D.: *See—*
Benjamin, Milton L.; Walker, David D.; and Crawford, Arthur R., 3,879,045.

Walker, Robert J. Laminating apparatus and method. 3,879,246, Cl. 156-265.000.

Walker, Thad O., to Texaco Inc. Controlling salt contaminated drilling fluids with ethylene dicarboxylic acid. 3,879,298, Cl. 252-8.50C.

Walker, Thad O., to Texaco Inc. Controlling salt contaminated drilling fluids by the addition of an admixture of a water soluble chromate and ethylene dicarboxylic acid. 3,879,299, Cl. 252-8.50B.

Walker, Thomas J., Jr. Electric drive unit for bicycles. 3,878,910, Cl. 180-34.000.

Wall, Raymond W. Method of making a unitary camper structure. 3,879,240, Cl. 156-78.000.

Wallshein, Melvin. Orthodontic arch wire. 3,878,609, Cl. 32-14.00A.

Walser, Armin: *See—*
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Walters, Ronald Bernard; and Larner, Donald Alexander, to Sperry Rand Limited. Hydraulic actuator controls. 3,878,765, Cl. 91-433.000.

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Walther, Gerhard; Bauer, Rudolf; Hubner, Hans Hugo; and Banholzer, Rolf, to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing a 1,2,3,6-tetrahydro-4-pyridylmethyl carboxylate and method of use. 3,879,556, Cl. 424-263.000.

Ward, Gary B.: *See—*
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Ward, James J.: *See—*
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Washington, Derek; and Guest, Andrew John, to U.S. Philips Corporation. Channel electron multiplier having secondary emissive surfaces of different conductivities. 3,879,626, Cl. 313-105.000.

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Watanabe, Masazumi: *See—*
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Watanabe, Takashi; and Tarumi, Eiichi, to Nippon Steel Corporation; and Daido Steel Sheet Manufacturing Corporation. Method of sealing terne sheets. 3,879,231, Cl. 148-6.15R.

Watase, Hideo; Ohno, Yasuhisa; Nakamura, Tadayoshi; Okada, Tadashi; and Takeshita, Toru, to Teijin Limited. Process for the recovery of D- or L-α-amino-ε-caprolactam hydrochloride of enhanced optical purity from mixtures of D- and L-α-amino-ε-caprolactam hydrochloride. 3,879,382, Cl. 260-239.30R.

Watkinson, John; and Elrich, Ralph R., to Union Carbide Corporation. Process for the preparation of flexible polyurethane foams in the presence of alkyl alkanoate blowing agents. 3,879,315, Cl. 260-2.5AF.

Watson, Charles Andrew: *See—*
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Waz, Edward M.: *See—*
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Weaver, Max A., to Eastman Kodak Company. Bis-methine compounds. 3,879,434, Cl. 260-465.00D.

Weber, Karl-Heinz; and Nohendorf, Hans, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Indicating apparatus for monitoring the operative status of a heading or coal face cutting machine. 3,879,725, Cl. 340-378.00A.

Webster, Colin James: *See—*
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Webster, Frank G.: *See—*
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Wedler, Frederick C., to Burlington Industries, Inc. Process and apparatus for treating textile materials. 3,878,575, Cl. 8-155.100.

Wehner, Klaus; Kisan, Werner; and Kunz, Gerald, to Veb Leuna-Werke "Walter Ulbricht". Method for separating thiophene from mixtures thereof with benzene. 3,879,268, Cl. 203-53.000.

Wehrmeister, Herbert L., to Commercial Solvents Corporation. Method of tranquilizing animals. 3,879,524, Cl. 424-270.000.

Weinle, Werner: *See—*
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Welsch, Matthias. Method for producing aluminum pellets. 3,878,993, Cl. 241-3.000.

Welsch, Wolfgang: *See—*
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Wendt, William H., III; and Krieps, George D., to Chicago Metal Mfg. Co. Machine for severing rings from a coil. 3,878,654, Cl. 51-34.00D.

Wenisch, Franz: *See—*
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Werding, Winfried Jean, to Gerwi A.G. Massaging apparatus. 3,878,837, Cl. 128-57.000.

Werz, Siegfried; and Zanner, Johann, Jr., to Agfa-Gevaert Aktiengesellschaft. Motion picture camera with mechanism for making exposures with lap dissolve. 3,879,115, Cl. 352-91.00S.

West, Robert Ferguson; and De Jong, Maarten Cornelis, to Stanley Works, The. Line level. 3,878,617, Cl. 33-369.000.

Western Company of North America, The: *See—*
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Wheeler, Eric B., to General Electric Company. Expansion joint. 3,878,868, Cl. 138-32.000.

White, Ernest M.; and Covarrubias, George S., to CBF Systems, Inc. Fire fighting module. 3,878,896, Cl. 169-9.000.

White, Gerome R., Jr. Rack and pinion drive counterbalanced hoist systems. 3,878,916, Cl. 182-145.000.

White, Hugh Edward; and Maxemchuk, Nicholas Frank, to RCA Corporation. Data loop communication system. 3,879,582, Cl. 179-15.0AL.

White, Hugh Edward: *See—*
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White, Norman C. Combustion engine with double-ended pistons and transfer passages. 3,878,821, Cl. 123-61.00R.

Wiart, Albert, to Jeumont Schneider. System for adjusting and commutating current in the windings of an AC machine from a constant-voltage DC supply. 3,879,646, Cl. 318-138.000.

Wick, Richard; Bestenreiner, Friedrich; and Giglberger, Dieter, to Agfa-Gevaert Aktiengesellschaft. Electrostatic color copying machine. 3,879,122, Cl. 355-4.000.

Wick, Richard; Winkler, Alfred; and Lermann, Peter, to AGFA-Gevaert Aktiengesellschaft. Miniature still camera with viewfinder. 3,879,743, Cl. 354-225.000.

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Wilcox, Charles L. Folding tool case. 3,878,939, Cl. 206-373.000.

Wildi, Theodore. Sound masking method and system. 3,879,578, Cl. 179-1.50M.

Will, Fritz G.; and Farrington, Gregory C., to General Electric Company. Sealed primary sodium-halogen cell. 3,879,220, Cl. 136-83.00R.

Williams, David J.; Lardon, Marcel A.; Abkowitz, Martin A.; and Pfister, Gustav, to Xerox Corporation. Persistent photoconductive compositions. 3,879,201, Cl. 96-1.600.

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Wilson, Marshall K., to Raymond Lee Organization, Inc., The, a part interest. Ratchet action wrench. 3,878,741, Cl. 81-128.000.
Wingler, Frank; Muller, Richard; Wassmuth, Gerd; Erdmenger, Rudolf; and Ullrich, Martin, to Bayer Aktiengesellschaft. Pulverizable acrylic resins. 3,879,357, Cl. 206-80.800.
Winiecki, Tadeus Carl. Armored jacket for motorcycle riders. 3,878,561, Cl. 2-2.000.
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Wisser, William L.; Ammlung, Louis C.; and Schenkel, Howard M., to Narco Scientific Industries, Inc. Avionics channel selection apparatus. 3,879,692, Cl. 334-86.000.
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Wittenbrook, Lawrence S., to O. M. Scott & Sons Company. Growth control of turf. 3,879,186, Cl. 71-76.000.
Wittenbrook, Lawrence S., to O. M. Scott & Sons Company. Amino substituted 1,2,4-triazinones. 3,879,386, Cl. 260-248.0AS.
Wojtowicz, John A.; and Lapkin, Milton, to Olin Corporation. Method for the preparation of biodegradable glycidol surfactants. 3,879,475, Cl. 260-615.00B.
Wolf, Ludwig, Jr.; and Seaverns, Robert G., to Baxter Laboratories, Inc. Membrane diffusion device having inflatable member for pressurization and sealing. 3,879,293, Cl. 210-321.000.
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Yurchak, Sergei; and Miale, Joseph N., to Mobil Oil Corporation. Isoparaffin-olefin alkylation with a catalyst complex of a cation exchange resin, BF_3 and HF. 3,879,489, Cl. 260-683.440.
Zackheim, Eli A., to Silver, Jules. Dispensing device for testing cows for mastitis. 3,878,831, Cl. 128-2.00F.
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Zappe, Hans H., to International Business Machines Corporation. Damped josephson junction memory cell with inductively coupled resistive loop. 3,879,715, Cl. 340-173.100.
Zech, Hans, to Messerschmitt-Bolkow-Blohm GmbH. Double-hydraulic actuator. 3,878,764, Cl. 91-411.000.
Zeldman, Maurice Irving; Burke, Joseph Stephen; and Cadle, Richard Whittington, to North American Rockwell Corporation. Flexible power transmission belt. 3,878,734, Cl. 74-229.000.
Zenith Radio Corporation: *See*—
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Zimmerman, Howard F., Jr.: *See*—
Bertorelli, Orlando L.; Mays, Robert K.; Williams, Lloyd E.; and Zimmerman, Howard F., Jr., 3,879,527.
Zimmermann, Hans; and Muller, Helmut, to Kienzle Apparate GmbH. Vehicle trip recorder. 3,879,739, Cl. 346-146.000.
Zinke, Charles D., to Cybersol Inc. Process for producing a therapeutic composition. 3,878,664, Cl. 53-22.00R.
Zondler, Helmut; and Pfleiderer, Wolfgang, to Ciba-Geigy AG. Process for the manufacture of piperidine derivatives. 3,879,399, Cl. 260-293.520.
Zyma S.A.: *See*—
Valenza, Andre; Horvath, Erno; Courbat, Pierre; and Albert, Alban, 3,879,469.

LIST OF REISSUE PATENTEES

TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Berz, Max, and W., to Wolfgang Berz. Apparatus for separating suspended solid particles from a carrier gas. Re. 28,396, 4–22–75, Cl. 55—294.

Berz, Wolfgang: *See*—
Berz, Max, and W. Re. 28,396.

Boyd, John A. Chute sanitizer and fire extinguisher. Re. 28,397, 4–22–75, Cl. 239—195.

Chen, Nai Y., S. J. Lucki, W. E. Garwood, to Mobil Oil Corp. Dewaxing of oils by shape selective cracking and hydrocracking over zeolites ZSM–5 type. Re. 28,398, 4–22–75, Cl. 208—111.

Garwood, William E.: *See*—
Chen, Nai Y., Lucki, and Garwood. Re. 28,398.

Lucki, Stanley J.: *See*—
Chen, Nai Y., Lucki, and Garwood. Re. 28,398.

Mobil Oil Corp.: *See*—
Chen, Nai Y., Lucki, and Garwood. Re. 28,398.

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Baron, Milton, to J. Frank Schmidt and Son Co. Oak tree. 3,706, 4–22–75, Cl. 51.

Baron, Milton, to J. Frank Schmidt and Son Co. Oak tree. 3,707, 4–22–75, Cl. 51.

Baron, Milton, to J. Frank Schmidt and Son Co. Oak tree. 3,708, 4–22–75, Cl. 51.

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Ahern, John F., to American Optical Corp. Spectacle frame front. 234,975, 4–22–75, Cl. D57—1.

Akazawa, Toshimasa: *See*—
Yamamura, Akazawa, and Miyamoto. 234,956.

Allibert Exploitation: *See*—
Dranssart, Jean-Paul. 234,935.

American Optical Corp.: *See*—
Ahern, John F. 234,975.

Anderson, Edward P., to Brunswick Corp. Reference electrode housing for a marine cathodic protection device. 234,947, 4–22–75, Cl. D12—155.

Anderson, Edward P., to Brunswick Corp. Anode housing for a marine cathodic protection device. 234,948, 4–22–75, Cl. D12—155.

Arambasic, Alexander, to Space Walkers, Inc. Shoe sole. 234,930, 4–22–75, Cl. D2—320.

Aumann, Robert E. Audio visual teaching unit. 234,950, 4–22–75, Cl. D19—60.

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Burke, Duncan P. Stool. 234,933, 4–22–75, Cl. D6—32.

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Burke, Maurice P.: *See*—
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Le Marquand, Andre. 234,943.

Couton, Lucien. Ventilated toilet seat. 234,951, 4–22–75, Cl. D23—71.

Delin, Fred O. Combined mold and permanent outside shell for exterior lighting fixture. 234,970, 4–22–75, Cl. D48—31.

Delin, Fred O. Combined mold and permanent outside shell for exterior lighting fixture. 234,971, 4–22–75, Cl. D48—31.

Dranssart, Jean-Paul, to Allibert Exploitation. Folding chair. 234,935, 4–22–75, Cl. D6—75.

Dweck, Morris. Portable radio. 234,973, 4–22–75, Cl. D56—4.

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Ervin, Roger N. Combined mold and permanent outside shell for exterior lighting fixture. 234,969, 4–22–75, Cl. D48—31.

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Gottsegen, Marten. Packaging dish for candy or the like. 234,942, 4–22–75, Cl. D9—198.

Guerrero, Luis F. Automatic closer for a sliding screen door. 234,938, 4–22–75, Cl. D8—203.

Hagert, Robert D., and J. L. Sanderson, to Bota of Boulder. Combined flask and cover therefor. 234,939, 4–22–75, Cl. D9—63.

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Olmazu, Roger, to Integrated Control Systems, Inc. Check perforator. 234,978, 4–22–75, Cl. D64—10.
Olney, Nathaniel M., and J. J. Power, to Swingline Inc. Stapler. 234,937, 4–22–75, Cl. D8—50.
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Walsh, James R. Container for boxes of film slides or the like. 234,981, 4–22–75, Cl. D87—1.
Yamamura, Masamichi, K. Makino, T. Akazawa, M. Miyamoto, and H. Koda. Combined tape recorder and amplifier. 234,956, 4–22–75, Cl. D26—14.

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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U. S. GOVERNMENT PRINTING OFFICE : O - 1975

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